IMPERIAL MYCOLOGICAL INSTITUTE
30 SEPT. 1940

REPORT

ON THE

DEPARTMENT OF AGRICULTURE

ST. LUCIA,

1939.

[Price Sixpence.]

St. Lucia.
Printed by the Government Printer at the Government Printing Office.
1940.

FORWARDING DISEASED SPECIMENS FOR EXAMINATION.

PLANTS.

A few fragments of a diseased plant are of practically no value for scientific investigation. Sufficient material should always be sent so that the primary cause of the trouble may be located.

Full particulars should be given as to the nature and extent of the damage done, the part of the plant attacked, the nature of the soil, drainage, the prevalence of the disease, when it was first noticed, and whether any similar kind of disease has previously been observed in the neighbourhood.

Specimens of portions of plants attacked by fungi may be sent green, packed in a well ventilated box if the time taken for delivery is under 24 hours, but if delivery takes a longer time, all leaves or soft fruits should be placed in a bottle or corked tube containing a solution made of one part rum or methylated spirit and two parts water. As many stages of the disease as possible should be sent, with notes as to the nature of each stage.

All specimens should be accompanied by detailed particulars of the nature of the disease and shall be addressed to :—

THE DEPARTMENT OF AGRICULTURE,
CASTRIES.

INSECTS.

Observations and specimens of economic importance or otherwise will always be gladly received. The following directions should be observed in this respect :—

Living insects should be packed with a supply of the plant on which they are found feeding and the box should have some small holes pierced for the purposes of ventilation. These should be carefully packed in such a way as to prevent their becoming crushed in transit.

If it is desired to preserve specimens they should be put up in bottles with tightly fitting corks. Methylated spirits, diluted rum, etc., make excellent preserving fluids.

Scale insects, etc., should be forwarded on the portion of the plant on which they are found.

If in doubt as to the best method of forwarding specimens, a letter should be sent asking for instructions and stating full details.

In all cases full particulars should be forwarded as to the nature and extent of damage done, along with any other important points that may have been noticed.

All specimens should be addressed to :—

THE DEPARTMENT OF AGRICULTURE,
CASTRIES.

STAFF OF THE DEPARTMENT OF AGRICULTURE, ST. LUCIA.

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SAINT LUCIA.

Report of the Department of Agriculture for the year ended December 31st, 1939.

SECTION I. AGRICULTURE IN THE COLONY.

1. Weather Conditions and Agriculture.

Weather conditions were more normal than has been the case during the past three years although the northern and southern extremities of the Island suffered to some extent from prolonged dry weather from January to June and again in December. In some parts of the Gros Islet and Dauphin districts water supplies were reduced to a very low level. On the other hand the wetter areas benefitted from the drier conditions after the exceptional rains of 1938, illustrated by the marked improvement in the cocoa crop. The drier conditions were also more favourable to the yield of coconuts.

The period was free from thunderstorms, apart from a sharp storm which broke over the Island on 19th June, when the majority of stations recorded heavy rain on that day, one station recording as much as 10.55 inches. No gales of hurricane force were experienced.

A more detailed analysis of meteorological conditions will be found appended to this Report.

2. (a) General Conditions and Progress in the Chief Industries.

1. THE SUGAR INDUSTRY.

A slight improvement in the average f.o.b. price of sugar is recorded for 1939, namely, approximately £8 19 1 per ton as against £8 4 0 per ton in 1938.

A total of 67,801.5 tons of cane was ground by the four factories, yielding 8,049.7 tons of sugars, as compared with the record of 79,027.8 tons of cane and 8,611.3 tons of sugars produced in 1938. The extraction ratio was the lowest on record, being 1 ton of sugar from 8.64 tons of cane, that for 1938 being 1 ton of sugar from 9.17 tons of cane; the bulk of the crop was produced at a ratio of 1 ton of sugar from 8.4 tons of cane. The highest and lowest extractions were 1 ton of sugar from 8.11 and 9.1 tons of cane respectively. The crop season ended in early June. Yields were generally lower than last year, averaging about 22.3 tons per acre; 2,401.08 acres were reaped by the four factories exclusive of contributors, metayers and syrup cane. The estimated area under sugar cane remains at 4,000 acres failing more reliable statistics, although the Dennery and Vieux-Fort Sugar Companies have considerably increased their area under cane during the year.

B.H. 10 (12) and B. 2935 continue to be developed as the standard varieties for wet and dry areas respectively; B. 726 is finding favour as an early maturing variety on the lighter soils in the wet areas.

Higher standards of field practice are still being aimed at, while additional factory improvements were under way on most estates in preparation for the 1940 crop. A noteworthy practice now being followed on estates is the planting of Bengal bean (*Stizolobium* sp.) as a leguminous cover crop during the fallow period, which is recognised as a great improvement over the old system of fallowing.

MOLASSES AND RUM.

The manufacture and export of rum was maintained at a high figure as compared with previous years, although it was less than in 1938; the bulk of the rum was consumed locally.

There was an appreciable increase in the quantity of fancy molasses produced, exports showing a 43·1% increase over 1938. The demand for the product, which was of good average quality, was very discouraging during the first half of the year, and had it not been for market reactions as a result of the War it is doubtful whether the crop would have been disposed of until next year. Such conditions offer no inducement to a small industry of this kind where capital is limited. It was hoped that the Barbados agreement would help to ease marketing difficulties to some extent but so far this does not seem to have been the case.

The following schedule shows comparatively the production and export of sugar manufactures for the five-year period 1935—39 :—

Year	Tons of Cane*	Sugar.			Molasses.			Fancy Molasses.			Rum.			Exported Total Value Sugar Products.
		Produced tons	Exported tons	Value £	Produced gallons	Exported gallons	Value £	Produced gallons	Exported gallons	Value £	Produced gallons	Exported gallons	Value £	
1935	67,197	7,286	6,080	48,377	256,900	140,639	1,021	†	28,264	1,380	31,408	...	...	£ 50,778
1936	70,847	8,118	7,707	60,358	280,951	82,526	610		24,602	522	34,551	4,091⅔	649	62,139
1937	69,871	8,029	7,225	62,313	237,484	97,135	854		46,881	2,347	33,828	2,427	243	65,757
1938	79,027	8,611	7,806	64,711	254,190	122,984	1,363		27,294	1,723	44,512	10,251	1,186	68,983
1939	67,801.5	8,049.7	7,182	64,257	249,000	89,312	798	39,077	39,077	2,229	41,121	6,092.7	684	67,968

* Production from four Factories only and excluding canes for syrup, &c.
† Figures not available.

2. THE COCONUT INDUSTRY.

A welcome recovery in this industry occurred during the year, as a result of increased copra exports, bringing it for the first time to second position in the order of importance of export crops. Increased yields of nuts were reported from all parts of the Colony, and may be attributed to the drier conditions obtaining throughout the year after the heavy rains of 1938. Plantations generally were free from disease, apart from isolated cases of Budrot disease which received early treatment. Under the section dealing with Entomological Investigations will be found a short reference to the successful introduction of coconut scale parasites from Trinidad. Efforts are to be made in co-operation with the Citrus Pests Entomologist to introduce a further consignment of these parasites for release on one or two large estates on the windward coast.

Very little extension in the area under this crop is to be recorded, which is still roughly estimated at 5,000 acres. New areas are gradually coming into production. The total crop of nuts exported was 2,796,581 valued at £7,734, as compared with 2,674,148 nuts valued at £8,278. If the production of copra is included, this brings the total nut production, excluding local consumption of water-nuts to a yield of approximately 5½ million nuts. As

usual the bulk of the nuts were shipped to Canada, with small consignments to the United Kingdom and the U.S.A. Details are :—

Destination.	Quantity.		Value.	
	1938 No.	1939 No.	1938 No.	1939 No.
			£	£
Canada	1,344,808	1,698,470	4,521	4,640
United Kingdom	937,500	416,400	2,651	1,059
U.S. America	149,200	360,770	472	1,201
Barbados	195,540	280,774	457	665
Bermuda	46,800	39,327	176	167
Montserrat	300	840	1	2

Copra.

A record quantity of copra was exported amounting to 579 tons valued at £5,174, compared with 306 tons valued at £2,906 in 1938. United Kingdom prices showed little improvement over the previous year averaging around £11 0 0 per ton c.i.f. London, and advantage was therefore taken of the better prices (from £8 0 0 to £11 0 0 per ton f.o.b.) offering in the neighbouring islands. Details of the exports are as follows :—

Destination.	Quantity Tons	Value £
Barbados	482	4,272
United Kingdom ...	41	350
Trinidad	32	288
Martinique	24	264

A commendable step was taken by local growers to protect and strengthen the industry by the formation of the St. Lucia Coconut Growers' Association Ltd. in April. The principal object of the Association for the present, at any rate, is to give effect to a scheme whereby a requisite amount of local copra will be processed by a firm in Trinidad and returned to the Colony in the form of edible oil and/or lard substitute. Unfortunately, owing to delay in framing certain essential legislation, the scheme has had to remain in abeyance, and it may not be possible to commence operations for a few months. Meanwhile, with the outbreak of war and the inevitable increase in prices, one or two of the larger coconut estates are arranging to manufacture edible oil for sale locally.

The following table shows the quantity and value of exported coconut products during the last five years :—

Year.	Coconuts No.	Value £	Copra tons.	Value £	Total Value £
1935	2,814,965	7,632	215	1,871	9,503
1936	3,409,621	9,608	306	3,561	13,169
1937	2,993,422	10,476	404	5,335	15,811
1938	2,674,148	8,278	306	2,906	11,184
1939	2,796,581	7,734	579	5,174	12,908

Coconut Charcoal.

One or two small consignments of coconut shell charcoal were shipped to England during the year realising around £5 per ton f.o.b. More shipments have not been made on account of the difficulty of obtaining minimum quantities of 25 tons each time.

3. THE LIME INDUSTRY.

The industry has experienced another difficult year due principally to unfavourable marketing conditions, which again offered little encouragement to lime growers to take a greater interest in their plantations. Apart from distilled lime oil there was a further decrease in the production of all other lime products, the total value being the lowest on record since the opening years of the industry.

The total exported lime crop of the Colony, calculated as barrels of limes, amounted to 34,820 barrels valued at £10,288, as compared with 28,294 barrels valued at £14,429 in 1938. The exported crops for the last five years are shown below :—

Year.	Quantity barrels.
1935	38,189
1936	22,569
1937	32,048
1938	28,294
1939	34,820

The export production of the crop of the Colony for the five-year period 1935—39 is shown in the following table :—

Year.	Concentrated Lime Juice.		Raw Lime Juice.		Distilled Lime Oil.		H. P. Lime Oil.		Green Limes.		Pickled Limes.		Total Value £
	Quantity gals.	Value £	Quantity gals.	Value £	Quantity lb.	Value £	Quantity lb.	Value £	Quantity brls.	Value £	Quantity brls.	Value £	
1935	1,080	45	29,613	854	10,264	9,673	1,504	2,517	6,619	8,035	...	...	21,124
1936	3,317	160	34,171	1,405	5,463	6,091	810	1,047	5,731	6,977	...	...	15,680
1937	1,109	60	11,350	602	11,305	10,187	2,106	2,946	3,537	4,420	26	28	18,243
1938	270	12	31,216	1,509	9,395	8,352	876	1,178	2,579	3,353	20	25	14,429
1939	150	8	26,863	1,164	12,417	6,098	771	836	1,850	2,182	...	...	10,288

Green Limes.

Exports of green limes registered a drop of about 28·8% below shipments for 1938, owing to a general decline in market demands. Bermuda was by far the largest market; exports to Canada and America were much lower than in 1938. After some delay arrangements are in hand by Government for the legal constitution of the St. Lucia Limes Association, which should enable affiliation with the West Indian Limes Association next year. The green limes campaign which is being carried out by a marketing officer of the Jamaican Government with the co-operation of the Colonial Empire Marketing Board in the United Kingdom unfortunately ceased on the outbreak of war. According to a recent report, experience so far gained with the United Kingdom market indicates a strong demand for large limes, a probable reason given for this was the unattractive appearance of the small lime when it becomes in the least shrivelled, coupled with the fact that a large lime looks much more like a lemon and can be sold more easily as a substitute for that

fruit. This demand is likely to continue until such time as the lime becomes a recognised citrus fruit over the whole area of Greater London. In this connection mention may be made of the fact that at the instance of the St. Lucia Agricultural and Commercial Society some 100 budded plants of the Persian or Tahiti lime were propagated at Union from budwood obtained from Dominica, and a large number of these plants were distributed free of charge to planters in different parts of the Colony for trial. Results to date have been fairly promising, apart from the difficulty experienced in developing a good frame-work to the young trees owing to the brittle nature of the branches.

All shipments were made on the f.o.b. basis, and an average price of about $5.00 per barrel was obtained. The following table shows the destinations of exports of green limes during 1939, as compared with 1938 :—

Destination.	1938		1939	
	Quantity barrels.	Value £	Quantity barrels.	Value £
Bermuda	972	1,093	821	868
United States of America ...	973	1,385	584	798
Canada	637	884	369	457
United Kingdom	8	11	34	38
Barbados	9	5	42	21
Total	2,599	£3,378	1,850	£2,182
Decrease in 1939 ...	...	...	749	1,196

Lime Juice.

A slight reduction in the exports of raw lime juice occurred to the United Kingdom market but the United States and Canada took increased quantities; no shipments were made to Bermuda, but the Barbados market took a small quantity. The following table of destination for the past two years may be of interest :—

Destination.	1938.		1939.	
	Quantity gals.	Value £	Quantity gals.	Value £
United Kingdom	22,472	1,134	16,993	733
Canada	8,085	352	8,611	392
U. S. America	622	22	999	30
Barbados	...	...	260	9
Bermuda	37	1	...	...
Total	31,216	1,509	26,863	1,164

The average c.i.f. price obtained in the London market for filtered juice was around 1*s.* 11*d.* per gallon.

Concentrated Lime Juice.

Exports dwindled again to the low figure of 150 gallons, all of which was consigned to the United Kingdom market; the value was £8.

Lime Oils.

Lime oils were more than ever the mainstay of the industry, the production of distilled oil increasing by 24.3%, exports of which amounted to 12,417 lb valued at £6,097, as compared with 9,395 lb valued at £8,352 in 1938. Unfortunately prices were much lower than last year, quotations for distilled oil averaging about 11*s.* 3*d.* per lb.

Exports of handpressed oil amounted to 771 lb valued at £836, as compared with 876 lb valued at £1,178; average price obtained for handpressed oil was 29*s.* per lb. The bulk of these oils were regularly marketed through the West Indian Lime Oil Sales Company in Trinidad.

The storage and sampling service in connection with lime oil shipped by the St. Lucia Lime Oil Producers' Coy. Ltd. under the control of the West Indian Organisation mentioned above was maintained by the Department.

4. THE BANANA INDUSTRY.

The phenomenal weather conditions which occurred during the latter part of 1938 together with the despondent attitude of the peasant producer partly due to a general tightening up in the export standard of bananas, combined to have a disastrous effect on production which was a decrease of some 49.3 per cent. below that for 1938. Production for the year was estimated at 80,000 stems, but an export total of only 74,506 stems was obtained valued at £6,585, the corresponding figures for 1938 being 148,950 stems valued at £13,568. The other producing islands suffered to a proportionate degree, as will be seen from the following comparative statement of total exports from the British West Indies to the Canadian Banana Company during 1939 :—

Island.	9s.	8s.	7s.	6s.	Totals.	Counts.	Per cent. Counts.	Rejects.	Per cent. Rejects.
Grenada ...	47,086	27,080	30,066	4,068	108,300	83,446	77%	...	...
St. Lucia ...	18,902	21,856	31,532	1,144	73,434	51,346	69%	10,947	12.9
Trinidad ...	24,581	21,388	20,528	...	66,497	50,886	76%	...	...
Dominica ...	10,101	12,560	14,264	1,180	38,105	26,948	70%	...	...
St. Vincent ...	7,827	11,220	18,368	1,972	39,387	25,919	65%	...	...
Total ...	108,497	94,104	114,758	8,364	325,723	238,545	72%	10,947	12.9

Short Shipped Lack of Space		
Dominica	...	2,030
Grenada	...	200
		2,230

Early in the year it became evident that the industry was passing through a critical stage, and in order to enable closer contact to be maintained between the Department and the peasant producer, the Banana Association recommended the appointment of a Banana Instructor, who would be able to give full time attention to advising and encouraging peasants in all stages of production as well as assistance in the selecting and grading of fruit at the wharf each shipment fortnight. This recommendation was supported by Government and approved by the Secretary of State for a period of one year in the first instance, and the instructor commenced work from the 1st August. Already there is a welcome indication that the industry is recovering its balance and, even more important, that the confidence of the peasant has been largely restored. The appointment of this instructor to supplement the advice and demonstrations of the agricultural officers has done much towards improving the position.

New areas have been planted on a small scale together with some replanting of old areas, but the extent of this activity is not considered sufficient to warrant any increase in the estimated acreage under bananas; the estimate therefore remains at 850 acres. Production for 1940 is estimated at 85,000 stems, an increase of 5,000 stems over the estimate made for 1939.

2. *Estimated number of trees and acreage of Bananas.*

There is no change in the tabulated estimate of the number of trees and the acreage given in last year's report.

5. THE CACAO INDUSTRY.

The crop was favoured with more or less ideal weather conditions throughout the year, benefiting as it did from the drier conditions prevailing as compared with 1938. Flowering was abundant and well advanced, resulting in good yields being obtained from those estates not suffering from neglect, which unfortunately are rapidly declining in number.

Although no improvement in prices occurred during the first half of the year, there was a noticeable upward trend as the outbreak of war approached.

The increased prices have tended to revive interest in cacao cultivation once again, though due to the combined effects of "Rosellinia" root disease and general neglect, this is unlikely to lead to any great increase in production.

The value of the crop dropped to the lowest level ever recorded, showing a decrease of some 52.3% below last year's figure. Production amounted to 3,197 cwt. valued at £3,967, as compared with 6,198 cwt. valued at £8,332 in 1938. Local prices for estate cacao averaged from 30*s.* to 40*s.* per cwt., and for peasants cacao around 2*d.* per lb. The average price obtained on the London market was from 38*s.* to 42*s.* 6*d.* per cwt. c.i.f. for estate cacao, and 22*s.* 7*d.* per cwt. c.i.f. for peasants' cacao. The bulk of the exports were to Canada and the United Kingdom. Further details are shown in the table below:—

Destination.	1938.		1939.	
	cwt.	£	cwt.	£
Canada	3,169	3,839	2,080	2,423
United Kingdom	2,794	4,289	736	1,277
Barbados	235	204	381	267
Total	6,198	8,332	3,197	3,967

The following table shows the amount and value of cacao exports over the past five years:—

	Cwt.	Value. £
1935	5,605	6,042
1936	6,538	9,627
1937	5,585	13,357
1938	6,198	8,332
1939	3,197	3,967

2. (b) Minor Agricultural Industries.

1. THE FRESH FRUIT TRADE.

It is very encouraging to be able to show an appreciable increase in this trade for 1939, amounting to no less than £1,064 over that for 1938, and representing as it does a record year. This is entirely due to a record shipment of Julie mangoes; oranges were also shipped in greater quantity.

One shipment of avocado pears, the first shipment of pears ever attempted to the London market, was made and although the results were not wholly successful, they were sufficiently encouraging to suggest the possibilities of developing a greater export trade with this fruit beyond the existing Bermuda market. The value of the trade was £5,109 as compared with £4,045 in 1938. A welcome increase in trade occurred with the Barbados market which slightly exceeded the Bermuda trade in value. The Barbados trade is largely in the hands of hucksters, whereas the Bermuda trade is conducted through agents or dealers. Shipment facilities remained unchanged until the outbreak of war, since when disorganised services have at times been very inconvenient; expansion of trade with Barbados is desirable on account of its close proximity.

The following schedule shows the extent of this trade during the past five years :—

	1935.		1936.		1937.		1938.		1939.	
	Amount	Value £	Amount	Value £	Amount	Value £	Amount	Value £	Amount	Value £
Mangoes crates	6,556	1,567	8,046	1,619	9,591	2,032	...	1,900	14,364	3,056
Avocado pears ,,	3,857	709	3,336	504	3,960	623	...	509	3,348	552
Oranges ,,	291	91	126	30	107	24	542	53	457	112
Grapefruit ,,	122	35	285	84	306	121	363	89	240	75
Pineapples ,,	13	3	17	2	36	7	...	31	39	9
Other Fruits ,,	...	1,752	6,758	1,894	...	1,617	...	1,463	...	1,305
Totals ...	10,839	4,157	18,568	4,133	14,000	4,424	905	4,045	18,448	5,109

The value of exports to the main markets during 1939 were as follows :—

	Value (£)					
	Bermuda.	Barbados.	U.K.	Canada.	Other Places.	Total.
Mangoes ...	1,259	1,606	181	8	2	3,056
Avocado pears ...	539	8	5	...	...	552
Oranges ...	13	98	...	...	1	112
Grapefruit ...	45	8	...	19	3	75
Pineapples ...	6	...	...	3	...	9
Other Fruits ...	...	...	...	...	...	1,305

2. VEGETABLES AND GROUND PROVISIONS.

A considerable increase in the volume of this trade is also recorded, especially with plantains and pumpkins. The bulk of these exports were absorbed by the Bermuda market.

The values of vegetable and ground provision exports during the past three years are shown below :—

	1937.	1938.	1939.
	£	£	£
Pumpkins	430	244	367
Plantains	76	85	279
Farine	108	214	163
Mixed	137	142	229
Total	£751	£685	£1,038

On the outbreak of war no time was lost in organising a Plant-More-Food-Crop campaign in all parts of the Island to meet any possible emergency. The campaign has met with enthusiastic response among most sections of the community and the Department has been actively pursuing this important work. Already a large increase under food crops is observed. Greater production of fresh vegetables is still being encouraged with some measure of success, judging by the increasing demand for carrot, turnip and cabbage seed from the Department.

3. COTTON.

As envisaged in last year's Report, the 1938/39 crop suffered from the effects of the heavy rains during October/November, 1938. Some 30 acres of cotton were planted from which a total of 7,900 lb of seed cotton was harvested, representing a yield of about 263 lb seed cotton per acre. Ginning outturn was approximately 30% which gives a lint yield of around 80 lb per acre. The value of the lint exported was £211. Satisfactory spinning tests were obtained on two samples of this lint forwarded to the Shirley Institute, England. Attention is being paid to the planting of cotton on contour banks and the establishing of windbreaks. On the Advisory Department's recommendation the Montserrat strain will be replaced by superfine St. Vincent strain V. 135 for which a readier demand exists in present circumstances.

4. CORN.

The Department is continuing in its efforts to encourage the increased planting of this crop with the object of reducing present annual importations of cornmeal, and ultimately replacing such importations with locally produced cornmeal. Unfortunately no figures of present production are obtainable, but on account of insect depredations and poor standards of cultivation yields are very low.

During the latter part of the year Government entered into arrangements with a local merchant and estate owner, who is importing a new mill, whereby all corn produced by peasants will be purchasd at 1*d*. per lb. which is the ruling market rate. The mill-owner has agreed to dispose of the cornmeal to local merchants, at present importing cornmeal, at a fixed wholesale price; arrangements have also been made to give this local industry the necessary protection from imported cornmeal. The scheme will commence next year.

Two severe pests of corn are the Corn Earworm (*Heliothis obsoleta*) and the Fall Army worm (*Laphygma frugiperda*) which in some years are a limiting factor in the cultivation of this crop. Experiments are being conducted in co-operation with the Citrus Pests Entomologist in an attempt to determine a simple yet efficient method of combating these pests. Meanwhile the possibility of finding a useful parasite to control either or both of these pests has not been overlooked.

A pamphlet on corn cultivation was in the course of preparation at the end of the year.

5. COFFEE.

Interest in this crop is being maintained by a few estates who are anxious to see an early reduction in the importation of this article, and increasing quantities of Liberian coffee are meeting the local demand. One or two estates are arranging to extend their existing areas in anticipation of an increased consumption in the future.

6. RICE.

Encouragement has been given to the planting of hill and swamp rice in suitable areas and some success has attended these efforts, but considerable scope exists for hill rice cultivation in the Choiseul and Laborie areas.

It is hoped to obtain seed of one or more improved strains of hill rice from overseas in time for planting next season.

7. TOBACCO.

Fair progress has been made with this crop chiefly on one estate in the Soufrière valley where large numbers of cigars were made which found a ready demand at a popular price in the larger towns. A few other estates have also taken up tobacco growing on a small scale and there is no reason why a small and useful industry should not be developed. At present cigars are being manufactured at a small factory in Castries, as well as on an estate in the Soufrière valley, and the local demand far exceeds the supply.

If tobacco cultivation is to continue with success, however, due care will have to be exercised in the control of diseases; two serious diseases already observed are Mosaic and Frog-eye spot (*Cercospora nicotiana*). Regular disinfection of all tobacco seed before sowing combined with better cultural practice will have to be resorted to in future if these diseases are to be successfully controlled.

8. MISCELLANEOUS CROPS

Other crops which the Department is engaged in propagating and/or conducting further trials with before general distribution are vanilla, pepper, *Coix Lacryma-jobi*, Job's Tears (an improved strain from Ceylon), improved varieties of sweet potatoes, yams, pulses and beans. Interest in vanilla planting has been evinced and several small plantings have been made during the year.

9. APICULTURE.

It is gratifying to be able to record the keen interest which peasants are showing again in bee-keeping in all parts of the Colony, stimulated to some extent by the improved prices offering for honey as a result of the War. The pre-war local price of a tin of honey (56 lb.) was around 7*s*. 6*d*., but it has since risen as high as 22*s*. 6*d*. to 25*s*. per tin. Export production amounted to 96,225 lb. of honey as compared with 51,702 lb. in 1938; the bulk of this honey was shipped to the United Kingdom.

The following table of exports and values of honey and beeswax over the past five years may be of interest:—

HONEY PRODUCTS.

	1935.		1936.		1937.		1938.		1939.	
	Quantities.	Value £	Quantities.	Value £	Quantities.	Value £	Quantities.	Value £	Quantities.	Value £
Honey ...	4,357	415	65,290	609	104,855	954	51,702	579	96,225	1,427
Beeswax ...	...	13	239	19	330	7	716	17	96	4
Totals ...	...	428	...	628	...	961	...	596	...	1,431

Although the small bee-keeper uses locally made hives and essential equipment with good results, the larger bee-keepers regularly import modern equipment from America. At least two foundation mills operate in the Colony.

With the co-operation of a local estate owner who is also an experienced bee-keeper, a pamphlet on Bee-keeping was published by the Department during the year. To assist in improving the existing bee stock an attempt was made to import an initial consignment of three pure-bred Italian queens from the firm of Messrs. A. I. Root in America; as no through air mail service was available the queens were sent by a fast steamship service direct from New York, a period of nine days. One queen survived the journey, but succumbed before she could be successfully introduced into a hive. There is a strong desire among local bee-keepers to obtain pure-bred Italian queens with which to strengthen their colonies, but no further attempts will be made until more satisfactory communications are available.

10. FOREST PRODUCTS.

The total value of exported forest materials dropped again this year by £412. Charcoal exports amounted to 69 per cent. of this total, and show a steady decrease over the past few years. Reductions in exports of other items under this head have been off-set to some extent by the increased demand for local building materials by the Barbados Settlement Company at Vieux-Fort, who are building their settler's houses almost exclusively with local timber.

The following table shows the exports under this head for the five-year period 1935—1939:—

Year.	Boards cub. ft.		Cedar cub. ft.		Firewood cub. ft.		Hardwood cub. ft.		Logwood tons.		Furniture.	Brooms doz.		Charcoal bags.	
	Amt.	£	Amt	£	Amt.	£	Amt.	£	Amt.	£	£	Amt.	£	Amt.	£
1935	1,639	140	50	5	92,032	134	2,900	326	20	50	212	855	28	73,349	3,667
1936	2,317	223	10	1	90,368	228	2,414	135	42	70	58	939	26	67,591	3,265
1937	2,815	228	...	...	94,208	223	3,851	231	27	53	557	1,376	38	36,367	1,763
1938	1,009	86	80	5	22,200	174	3,145	238	...	...	390	1,280	38	33,321	1,607
1939	1,030	85	110	13	15,320	118	1,978	100	...	...	285	1,571	46	26,954	1,444
Average of 5 years	1,762	152	50	5	62,826	195	2,858	206	20	35	301	1,204	35	47,517	2,349

11. FISHING INDUSTRY.

Enquiries conducted into the position of the local industry have drawn the opinion from older fishermen that a considerable reduction in the fish population has occurred in the inshore region during the past decade or two and that large catches are seldom obtained within the three mile limits. This is certainly the case with the popular flying fish, since during the season the fishermen invariably have to travel as far as the Martinique Channel. According to information no wastage of fish occurs in any of the fishing villages even during the flying fish season; when fish can be obtained cheaply many people ensure a supply ahead by drying what they do not immediately require. A few shop-keepers in the villages buy a larger quantity of fish and salt them for sale at a later date, and it is possible that the sales of imported salt fish are lower during the height of the flying fish season.

It would seem therefore that if a substantial reduction in imported salt fish is to be obtained some expansion of the present industry must take place, whereby a surplus amount of fish could be made available for curing, mainly for sale to villages on the windward coast, where fresh fish supplies are strictly limited by precarious fishing conditions during most months of the year.

12. LIVESTOCK.

There is reason to believe that a greater amount of interest is being shown in this industry than has been the case for some time. Captain H. V. M. Metivier, O.B.E., B.Sc., M.R.C.V.S., Senior Veterinary Officer, Trinidad, visited the Colony from July 22nd to July 30th, as a result he was able to make a detailed tour of the Island and contact with many stock-owners on their property advising them concerning their problems on the spot. At the end of his visit he addressed a special meeting of the St. Lucia Agricultural and Commercial Society. In addition to this personal visit, Captain Metivier has given much helpful advice by correspondence, and the thanks of the Department are accordingly due to him for his keen interest in livestock development in St. Lucia. The interest which these annual visits arouse amongst local stock-owners indicates the benefit which the industry would derive from the appointment of a Veterinary Officer for the Windward Islands who would be able to give closer attention to livestock problems and greater encouragement to development, and it is hoped that an appointment of this nature may soon be possible.

With a view to effecting much-needed improvement in local horses, a local syndicate purchased a very fine thoroughbred stallion "Millersdale" (sire "Bold Archer", grandsire "Phalaris") from Barbados in August; arrangements have been made by Government to take over the animal early in 1940.

No infectious diseases among animals were reported during 1939. The phenomenal rain which fell on June 19th in most districts of the Colony was responsible for the loss of numbers of cattle, goats and sheep in the northern area, and in other parts of the Colony. The sudden mortality was due to the effects of intestinal parasites following the rapid change of weather conditions. The bulk of these losses were suffered by peasants, whereas estate owners in the habit of regularly dosing their stock with copper sulphate suffered little or no loss. Regular use of the copper sulphate treatment has been advocated by the Department for some years past, but in order to draw the attention of stock-owners again to this simple remedy a leaflet fully explaining the method was printed and published.

A leaflet describing two methods of composting suitable for small-holdings was prepared and distributed; a notice drawing attention to the growing menace of uncontrolled pig keeping was also published and widely distributed.

The values of exports under this head over the past five years are given below:—

Animal Export.

	1935.		1936.		1937.		1938.		1939.	
	Quantities.	Value. £	Quantities.	Value. £	Quantities.	Value. £	Quantities	Value. £	Quantities.	Value. £
Horses ...	35	180	34	136	10	38	14	46	5	19
Asses ...	...	...	3	9	...	...	...	...	...	...
Pigs ...	...	...	...	...	...	...	1	1	28	45
Mules ...	12	70	9	35	22	85	13	95	7	28
Total ...	...	250	...	180	...	123	...	142	...	92

Animal Inspection Service.

Animal importations into the Colony during the year under review was as follows :—

Cattle	...	...	4
Pigs	...	...	1
Sheep	...	...	1
Dogs	...	...	9
Horses	...	...	1

Twenty export certificates were issued for animals leaving the Colony.

3. SOIL AND FOREST CONSERVATION.

(a) *Crown Lands Allocations.*

During 1939 a total of sixty-six (66) applications for Crown Lands were received from the Crown Lands Department for inspection, which together with thirty-seven (37) applications brought forward from 1938, amounted to one hundred and three (103); of these fifty-two (52) were approved and (18) rejected, while thirty-three (33) were carried forward to be inspected early in 1940. Details of this work are as follows :—

	1—5 acre units.	5—10 acre units.	10—15 acre units.	15—20 acre units.	units of 20 acres & over.	Total Acres.
Approved ...	1	44	7	...	...	319
Rejected ...	2	13	...	1	2	143

In last year's Report under "Soil Conservation" mention was made of the desirability of effecting a tightening up on the existing easy system of Crown Land allocations, not only to promote soil conservation, but also on account of the rapidly diminishing areas of Crown Lands which may be regarded as suitable for permanent agricultural development. As a result of this and a separate recommendation made to Government, it has been decided to fix 10 acres as a reasonable economic unit, and no application for Crown Lands in excess of 10 acres will be considered, nor may an individual already owning land apply for an additional area which would exceed 10 acres including the land he already owns.

(b) *Soil Conservation.*

The Department continues to strive towards a better understanding and appreciation of soil conservation methods throughout the Colony, but it has to be admitted that progress is very slow mainly due to the antipathy of the average peasant agriculturist towards this essential work. Although some interest is shown by a few of the more enterprising peasants who have had small sections of their holdings lined out on the contour for draining and contour grass planting, it seems that greater progress will only be achieved in cases in which a condition of occupation is that all cultivation must be carried out to the satisfaction of the Agricultural Department. The Canaries Allotment Scheme was the first to be controlled in this way. When this scheme was first commenced a number of the allottees refused to accept such a condition, but the objection was fortunately overcome and a satisfactory atmosphere now prevails. The scheme is under regular supervision by this Department, and all cultivation is being done on contour banks, and serves as a valuable demonstration centre in the Canaries area. An Instructor was trained in the use of a road tracer with which he marks out the contour lines as each allotment is cleared. In addition a sum of £20 has been sought in the 1940 Estimates for the purpose of commencing one or two soil conservation demonstration plots in the more backward areas.

Rather more progress can be reported in respect of the larger estate owners, a number of whom have sought and received advice and/or actual assistance in the lay-out of sections of their estates. A few more independent owners have acted on their own initiative following advice received.

The value of the Departmental nurseries as important centres of soil conservation demonstration is again emphasised, and additional demonstration work in the form of bench terracing for nursery beds on the slope and contour grass planting was carried out.

The uncontrolled keeping of animals, pigs especially, by peasant proprietors and even estate owners is responsible for a good deal of unnecessary soil erosion, and a notice drawing attention to this growing menace was prepared and published in the *Gazette* and local press, and additional copies were printed for wider circulation. Another contributing factor to erosion is the indiscriminate burning of land preparatory to planting, and so far little or no success has attended the efforts of the Department to influence the peasant against this practice, or, where burning is justified, to burn in heaps. It seems unlikely that this practice will be discontinued until some form of practical legislation can be introduced to deal with it. Even public opinion so far has not been aroused to a sufficient extent against this serious menace to the heritage of St. Lucia, namely the soil.

(c) *Forest Conservation.*

A forestry division of the Department was commenced in March when two forest patrols were appointed, one for the northern half of the Island and the other for the southern half. Each patrol consists of a forest guard and a forest watcher. There can be no doubt that as a result of constant patrol work in the forest areas squatting and all the evils associated with it have been greatly reduced, but it will be some time before the position can be regarded as entirely satisfactory. The work of the patrols is not easy and is rendered more difficult by the unwillingness of the peasant community to co-operate with them in the prevention of trespass and squatting in the forest areas.

Advantage is also being taken of the large areas of land which remain unescheated and over which Government has little or no control. Squatting in these areas continues unabated. Efforts to escheat some of these areas are being made commensurate with the limited survey staff available. A scheme for financial assistance was forwarded to the Secretary of State which would enable the survey staff to be temporarily increased until such time as all these areas have been surveyed, and it is hoped that this scheme will be approved in the near future.

Although initial steps have been taken to implement the forest policy recommended by Mr. Wimbush in 1936, there is urgent need for the temporary services of a Forest Officer to advise and assist particularly in the demarcation of forest reserves, introduction of suitable forestry legislation, and re-afforestation programmes in all vulnerable areas. In a Colony where timber is so extensively used by the peasantry for building and other domestic purposes, it is essential that adequate supplies of local timber should be readily available, but at present there is every indication that the limited quantity of useable timber in our forest areas is being rapidly exploited with no attempt at replacement. Unless re-afforestation schemes are developed on a suitable scale in the future, it is fairly certain that an increasing amount of timber will have to be imported in years to come.

Preliminary experiments in the planting of Teak have so far been very encouraging in the Quilesse area where some 1,500 plants were transplanted between June and September, on a strip of virgin forest land. Up to 500

plants were also transplanted during the same period near the Barre-de-L'Isle Nursery on an acid red clay soil but have not succeeded. Further seed of Teak and Honduras Mahogany was obtained and sown to continue this experimental work, but the importance of using local timbers in any programme of re-afforestation is fully realised, and these would include Laurier cannelle (*Ocotea rubra*), Laurier mabre, Laurier cypre, Balata (*Mimusops balata*) and Bois Blanc. The raising of large numbers of *Cassia siamea* and Casuarina seedlings has been undertaken at Departmental nurseries in an attempt to encourage tree planting for windbreaks and fuel in the drier coastal areas of the Colony. A sum of £50 has been included in the 1940 Estimates to enable small scale re-afforestation work to be carried out in essential areas.

The improvement of our forest resources should be regarded as sound policy since it is becoming increasingly evident that the area of forest lands available for agricultural development in this Colony is rapidly diminishing, and that further encroachment in these areas must cease in the interests of soil and water conservation, and therefore the ultimate welfare of the community. In an agricultural country of limited area and steadily increasing population it would seem that the wisest policy will be the gradual development of the fairly extensive and suitable areas of idle land to be found in many parts of the Colony.

4. LAND SETTLEMENT.

As recorded briefly in Appendix IV of this Report, circumstances were such that it was found necessary to recommend the abandonment of the Quilesse Land Settlement Scheme.

The Canaries Allotment Scheme was started in October as a war measure to provide landless families in the Canaries Village with the opportunity of participating in the Plant-More-Food-Crops campaign. Unfortunately, however, the enthusiasm at first displayed towards the scheme has not been maintained, and the Department has had to use a great deal of persuasion to obtain allottees; at the end of the year 19 plots still remained unleased. Planting material of a variety of crops suitable for this area is being obtained and distributed to the allottees free of charge.

Two other land settlement schemes on the Leeward coast were in prospect at the end of the year, but it will be some time before the detailed plans of these schemes can be prepared. Unfortunately land settlement organisation is not as straightforward as is fondly supposed. On the contrary it is still very much in the experimental stage and is fraught with numerous difficulties which must be overcome if it is to be at all successful. Schemes which have the production of a high value crop such as sugar as their main object may prove a source of great attraction, but not all schemes will be able to offer similar inducement.

5. IMPORTATION OF FOODSTUFFS.

Quantities and values of imported foodstuffs during the past five years will be found in Schedule II, a glance at which shows that the value of foodstuffs imported last year increased by 3·8% over 1938, and indicates that the attempts so far made to encourage greater independence of imported foodstuffs have met with little or no success, but it is rather early to see what reaction the outbreak of war will have on the position.

COMPARATIVE SCHEDULE OF AGRICULTURAL PRODUCTS

		1935.			1936.		
		Quantities.	Value. £	£	Quantities.	Value. £	£
SUGAR PRODUCTS:							
Sugar, Vacuum Pan	tons ...	6,080	48,377		7,707	60,358	
Molasses & Syrup	gals. ...	168,903	2,401		107,128	1,132	
Rum	,, ...	...	...	50,778	...	...	61,490
LIME PRODUCTS:							
Concentrated Lime Juice	gals. ...	1,080	45		3,317	160	
Raw Lime Juice	,, ...	29,613	854		34,171	1,405	
Distilled Lime Oil	lb. ...	10,264	9,673		5,463	6,091	
Essential H.P. Otto of Limes	lb. ...	1,504	2,517		810	1,047	
Green Limes	brls. ...	6,619	8,035		5,731	6,977	
Pickled Limes	,, ...	...	...	21,124	...	...	15,680
COCONUT PRODUCTS:							
Coconuts	No. ...	2,814,965	7,632		3,409,621	9,608	
Copra	tons ...	215	1,871	9,503	306	3,561	13,169
CACAO PRODUCTS:							
Cacao	cwt. ...	627,809	6,042	6,042	6,538	9,627	9,627
BANANAS	bchs. ...	60,439	5,209	5,209	108,633	8,910	8,910
FOREST PRODUCTS:							
Boards (native)	c. ft. ...	1,639	3		2,317	223	
Cedar	,, ...	50	3		10	1	
Firewood	cords ...	719	234		706	228	
Logwood	tons ...	20	50		42	70	
Hardwood	c. ft. ...	27,168	182		2,414	135	
Brooms	doz. ...	855	28		939	26	
Charcoal	bags. ...	73,349	3,667		67,594	3,265	
Furniture (Household)	...	27	218		...	50	
Miscellaneous	...	...	...	4,385	...	81	4,079
FRESH FRUIT & PRODUCTS:							
Mangoes	crates ...	6,556	1,567		8,046	1,619	
Oranges	,, ...	291	91		126	30	
Grapefruit	,, ...	122	35		285	84	
Pineapples	,, ...	...	3		17	2	
Avocado Pears	,, ...	3,857	709		3,336	504	
Mixed Fruits	,, ...	5,496	1,699		6,749	1,891	
Preserved Fruits	...	2,318	53		...	54	
Jams, Jellies, etc.	...	...	...		...	51	
Miscellaneous	...	...	...	4,157	...	16	4,251
SPICES:							
Nutmegs	lb. ...	4,736	63		10,509	134	
Mace	,, ...	1,032	44		1,913	72	
Kola Nuts	,, ...	11,776	106		11,155	70	
Miscellaneous	,, ...	...	62	275	2,037	39	315
LIVE STOCK & PRODUCTS:							
Hides & Skins	No. ...	2,879	145		4,329	132	
Shells & Turtles	lb. ...	357	67		...	134	
Fish Oil	gals. ...	...	...		7	2	
Horses	No. ...	35	180		34	136	
Asses	,, ...	...	...		3	9	
Mules	,, ...	12	70		9	35	
Pigs	,, ...	...	...	462	...	...	448
HONEY PRODUCTS:							
Honey	lb. ...	44,357	415		65,290	609	
Beeswax	,, ...	...	13	428	239	19	628
BAY PRODUCTS:							
Bay Oil	gals. ...	9	4		...	...	
Bay Rum	,, ...	1,168	243		1,136	227	
Citrocol	,, ...	...	...	247	...	...	227
VEGETABLE PRODUCTS:							
Plantains	bchs. ...	512	38		965	63	
Farine	lb. ...	13,128	66		17,039	103	
Yams	,, ...	...	4		...	6	
Miscellaneous	...	...	14		...	565	
Pumpkins	,, ...	...	...	122	..	...	737
MISCELLANEOUS PRODUCTS:		...	500	500	...	797	797
Total Exports	...			103,232			120,358

AND BY-PRODUCTS EXPORTED FROM ST. LUCIA, 1935—1939.

1937.			1938.			1939.		
Quantities.	Value. £	£	Quantities.	Value. £	£	Quantities.	Value. £	£
7,225	62,313		7,806	64,711		7,182	64,267	
144,016	3,201		150,278	3,036		128,389	3,027	
2,427	243	65,757	10,251	1,186	68,983	60,927	684	67,968
1,109	60		270	12		150	8	
11,350	602		31,216	1,509		26,863	1,164	
11,305	10,187		9,395	8,352		12,417	6,098	
2,106	2,946		876	1,178		771	836	
3,537	4,420		2,579	3,353		1,850	2,182	
26	28	18,243	20	25	14,429	...	...	10,288
2,993,422	10,476		2,674,148	8,278		2,796,581	7,734	
404	5,335	15,811	306	2,906	11,184	579	5,174	12,908
5,585	13,357	13,357	6,198	8,332	8,332	3,197	3,967	3,967
126,940	11,814	11,814	100,726	13,568	13,568	74,496	6,585	6,585
2,815	228		1,009	86		1,020	85	
...	...		80	5		110	13	
94,208	223		555	174		383	118	
27	53		...	...		...	...	
3,851	231		3,145	238		1,978	100	
1,376	38		1,280	38		1,571	46	
36,367	1,763		33,321	1,607		26,954	1,444	
...	557		...	390		...	301	
..	...	3,093	...	77	2,615	...	96	2,203
9,591	2,032		...	1,900		14,364	3,056	
107	24		610	53		457	112	
306	121		325	89		240	75	
36	7		...	31		39	9	
3,960	623		...	509		3,348	552	
...	1,617		...	1,299		...	1,252	
...	41		...	113		...	53	
...	56		...	53		...	46	
..	...	4,521	...	11	4,058	...	3	5,158
10,066	184		15,201	230		4,654	100	
1,892	99		2,183	97		1,200	78	
15,546	144		11,683	96		14,375	117	
2,436	41	468	...	87	510	...	50	345
2,446	294		1,376	124		1,665	111	
464	115		453	251		...	112	
..	...		...	4		30	18	
10	38		14	46		5	19	
...	...		...	...		...	..	
23	85		12	95		28	28	
..	...	532	...	...	520	28	45	333
104,855	954		51,702	579		96,225	1,427	
330	7	961	716	17	596	96	4	1,431
...	...		...	...		...	...	
906	177		1,322	254		1,161	318	
212	89	266	192	90	344	139	60	378
1,256	76		1,468	85		3,410	279	
13,262	108		31,471	214		19,530	163	
..	1		...	6		...	29	
.	136		...	133		...	200	
. .	430	751	71,244	244	682	83,199	367	1,033
.	47	47	...	832	832	...	374	374
		138,238			126,640			112,976

SUMMARY STATEMENT OF THE PRINCIPAL ARTICLES IMPORTED INTO THE COLONY

Articles.	Quantities.				
	1935.	1936.	1937.	1938.	1939.
CLASS I.—FOOD, DRINK, AND TOBACCO :					
Animals—Horned Cattle No.	4	...	3	4	4
Beer and Ale gals.	4,611	3,528	5,805	3,726	4,393
Biscuits, Bread and Cakes lb.	35,944	37,204	40,989	41,163	39,483
Butter ,,	48,729	51,593	51,176	49,136	49,786
Butter Substitutes ,,	100,669	107,932	105,832	118,497	118,197
Cattle and other Animal Foods lb.	24,566	28,692	23,834	25,360	28,012
Cheese ,,	15,327	13,853	16,091	13,707	14,680
Coffee ,,	60,963	63,071	63,257	68,763	75,181
Confectionery	...	...	...	..	...
Fish :					
Salmon, Mackerel and Trout lb.	12,843	19,496	16,700	18,000	23,300
Other kinds ,,	666,302	772,439	638,399	690,925	800,487
Grain, Flour, Pulse &c.					
Grain—Oats lb.	7,955	7,550	9,506	1,920	10,440
Rice ,,	438,588	575,368	693,339	655,597	685,216
Flour—Wheaten ,,	3,143,512	3,104,982	3,041,951	3,338,483	4,179,651
Cornmeal ,,	36,266	51,268	75,754	84,652	67,816
Pulse : Beans, Peas ,,	32,910	47,692	43,114	52,410	48,892
Lard & Lard Substitutes ,,	58,375	54,815	59,599	64,950	74,838
Meat :					
Canned ,,	5,394	8,333	8,378	9,892	12,484
Salted, Pickled, Smoked or Cured lb.	52,411	54,668	58,117	57,214	55,246
Oil—Edible gals.	44,396	42,237	37,319	42,239	48,810
Salt—Coarse tons	415	319	518	375	466
Spirits :					
Rum p. gals.	892	792	1,105	1,043	1,161
Gin ,,	531	394	402	457	547
Whisky ,,	1,142	923	946	834	923
Cordials & Liqueurs l. gals.	119	153	138	81	120
Sugar—Unrefined lb.	23,253	92,726	102,964	289,257	235,716
Refined ,,	162,848	152,677	162,955	162,199	109,482
Tobacco and Snuff :					
Unmanufactured lb.	29,286	32,976	35,521	40,659	37,551
Manufactured, Cigarettes ,,	8,191	8,544	9,127	7,668	8,188
Other kinds ,,	9,039	9,606	8,810	8,323	10,820
Vegetables, Fresh ...	...	...	...	...	...
Wine, Still gals.	3,453	4,217	4,230	4,287	4,805
Other Articles ..	...	...	...	...	...
Total					

ULE II.

OF SAINT LUCIA CLASSIFIED ACCORDING TO GROUPS, DURING THE YEARS 1935—1939.

Value.				
1935.	1936.	1937.	1938.	1939.
£	£	£	£	£
38	...	55	47	70
1,036	776	1,219	803	896
840	927	1,149	1,064	1,062
2,497	2,651	2,888	3,127	3,424
1,971	2,265	2,216	2,088	2,054
97	119	130	130	121
542	571	664	599	638
1,128	890	991	930	1,017
628	897	917	930	1,127
153	179	165	304	216
6,817	6,735	7,703	7,122	9,030
33	29	45	10	45
1,995	2,320	3,168	2,976	3,040
16,795	17,348	23,192	20,912	19,338
168	243	399	420	346
278	433	399	430	438
1,136	1,157	1,339	1,365	1,544
157	233	263	291	372
1,527	1,474	1,655	1,599	1,631
5,611	6,187	5,950	5,377	5,921
507	495	579	448	432
499	496	613	598	621
479	395	415	472	544
1,653	1,500	1,531	1,381	1,538
186	315	336	253	296
139	469	536	1,528	1,391
730	753	861	839	627
908	1,109	1,430	1,772	1,498
2,650	2,882	2,945	2,296	2,353
1,893	1,992	1,785	1,634	1,872
471	409	584	432	544
669	957	874	886	1,043
4,088	4,192	4,983	4,584	...
58,319	61,398	71,979	67,647	70,326

As indicated under the section dealing with ground provisions, the Plant-More-Food-Crops campaign received encouraging response in all parts of the Colony and a considerable increase in planting followed; with the possible shortage of supplies from overseas and certain increased cost, a steady increase in the consumption of locally produced food should result. Certainly the Department will continue to do all it can to encourage the use of local foods not only as a war measure, but as an essential frugal plan of the future.

Imports of wheaten flour increased by well over three-quarters of a million pounds in quantity, although the value was less than in 1938; rice also showed some increase, while there was a slight reduction in the quantities of cornmeal and pulses imported. The extensive cultivation of corn, pulses and hill rice in common with other food crops is being actively encouraged in all suitable areas and given enthusiasm, determination and favourable weather should lead to a substantial reduction in imported foodstuffs.

Salt fish and coffee importations also reveal considerable increases in quantity, the substitution of which in quantity for local salt fish and coffee must of necessity take time. It is hoped to give further encouragement to the local salting of fish next year provided adequate supplies become available; the consumption of local coffee is increasing and present supplies are hardly able to keep pace with demands.

A normal increase in edible oil and lard substitutes occurred, but arrangements are in progress for these commodities to be supplied from locally manufactured copra processed in Trinidad. Meanwhile, one or two of the larger coconut growers are producing edible coconut oil on a small scale for local consumption.

While the importation of canned meat may be excused to some extent on grounds of convenience, there can be little justification for the large importations of cured meat; there is no scarcity of fresh meats, the greater consumption of which would not only give much needed stimulus to our livestock industry, but at the same time mark an improvement in the standard of diet.

Whilst on the subject of diet, a good deal of attention is being given in other countries to the production of what are known as "Protective" foods, or foods which give added protection from certain ailments on account of their high vitamin content, especially as they are easy and cheap to obtain. Such foods are green vegetables, fresh fruits, milk, butter, eggs, fresh meat, fresh fish and certain ground provisions, most of which are readily obtainable in St. Lucia at reasonable cost. There is need for increasing production of as many of these "Protective" foods as possible, more particularly when it is learnt that white bread, white rice and salted cod-fish which are consumed in such large quantities in St. Lucia today are all "Non-Protective" foods.

SECTION II. WORK IN THE DEPARTMENT OF AGRICULTURE.

1. Plant and Seed Introduction.

Introduction of planting material during the year comprised 21¾ lb. and 5 packets of seed, and 317 plants and cuttings including 40 new sugar cane varieties: the majority of these were new or improved types of economic crops, the remainder being ornamentals.

In addition to the above, a regular supply of vegetable seeds was maintained for local sale.

Plant Inspection Service.

(a) *Imports.* A total of 209 importations, exclusive of those mentioned above as made by the Department was examined. Seven consignments passed through the fumigatorium for treatment prior to delivery, and 26 consignments were destroyed.

(b) *Exports.* Forty-three certificates of inspection were issued for planting material leaving the Colony.

Plant Propagation and Distribution.

The propagation and distribution of all types of planting material was carried on during the year by the Department's Plant Nurseries, general remarks on which appear elsewhere in this report; the following table shows the distribution of planting material by the Department during the year, the corresponding figures for the previous 2 years being inserted for comparison.

Distribution of Planting Material.

	1937	1938	1939
Budded and Grafted limes ...	5,288	5,483	3,467
Sour Orange Seedlings * ...	...	7,084	8,488
Budded Oranges ...	741	345	1,176
Budded Grapefruit ...	180	255	54
Grafted Mangoes ...	79	41	121
Grafted Avocados ...	108	44	11
Pineapple Plants ...	...	...	36
Coffee, Robusta ...	17,758	5,386	1,250
Dwarf Coconuts ...	208	323	520
Total Orchard plants ...	24,362	18,961	15,123
Cane plants ...	6,544	2,254	4,905
Forest plants ...	47	...	1,047
Bananas ...	1,352	502	559
Total Economic plants ...	32,305	21,717	21,634
Corn (lb.) ...	...	30	...
Green-dressing (lb.) ...	149	275½	38
Cover crop cuttings (bdls.) ...	...	...	1
Fodder plants and grasses ...	2	7	13
Pasture grasses ...	2	15	10
Lemon grass (stools) ...	...	...	8,100
Ornamental plants and cuttings	833	583	483
Miscellaneous ...	...	...	633

* Mainly for nursery work.

2. WORK AT THE UNION AGRICULTURAL STATION.

1. *Staff.* There were no changes in the staff of the Station.

2. *Weather conditions.* A year of almost normal weather must be recorded; an exceptionally heavy precipitation was experienced in June, but no damage was caused by flooding. November was normal but December was unusually dry, not, it is to be hoped, the forerunner of a severe dry season for 1940. Total rainfall for the year was 77.31 inches, with a maximum fall of 10.55 inches on June 19th; rain fell on 285 days.

3. EXPERIMENTAL WORK.

Two experiments were commenced during the year:—

(a) Manurial Experiment with Guatemala Grass.—

The experiment was laid out in the form of two 4×4 Latin squares with four treatments i.e.—

(i) Pen manure, 10 tons per acre.
(ii) Pen manure, 10 tons per acre.
Sulphate of Ammonia, 1 cwt. per acre.
(iii) Sulphate of Ammonia, 2 cwt. per acre.
(iv) Sulphate of Ammonia, $1\frac{1}{2}$ cwt. per acre.
Muriate of Potash, 1 cwt. per acre.
Superphosphate, 1 cwt. per acre.
Plot size—$15' \times 22'$
Spacing—$2' \times 1\frac{1}{2}'$

All plots will be cut at intervals of 8 weeks. Cutting at 8"—10" above ground.

(b) Experiment with maize (corn) in co-operation with Citrus Pests Entomologist, for investigation of Corn Earworm (*Helitohis obsoleta*) control—

Unfortunately this experiment failed in spite of being supplied on three separate occasions, owing to severe attacks by the Fall Army worm (*Laphygma frugiperda*). It is intended to continue this experiment about May of next year.

4. GENERAL OBSERVATIONS ON THE ECONOMIC CROPS.

The Citrus Orchards generally made good growth, and fruiting was satisfactory. The Marsh Pink grapefruit set fruit for the first time; oranges suffered severely from bird damage. Cover cropping and manuring followed the lines of previous years.

Limes, both hybrid and West Indian all bore good crops; 148 barrels were picked from the area now utilised by the Citrus Pests Entomologist.

All varieties of *mangoes*, except the Ennuna, made satisfactory growth and yielded well; the Julie crop was used for trial shipments by the Government Marketing Depot.

Avocados were again unlucky, and it must now be admitted that this crop is not suited to Union conditions: the preservation of essential propagating material in a more favourable area is now receiving attention.

Sugar Cane the area has been increased to accommodate new varieties which are being regularly received: 3,755 cuttings were distributed during the year.

A small plot of *teak* (*Tectona Grandis*) flowered and set seed. Plantings of Adlay (*Coix lachryma-jobi*) were not entirely successful, and further trials are planned. *Kudzu Vine* (*Pueraria thunbergiana*) has grown well and gave three cuttings the vine is readily eaten by animals and shows promise as a fodder crop for stall feeding.

5. THE ORNAMENTAL SECTION.

Work in this section has progressed satisfactorily, and has been given added encouragement by the increased interest shown by the general public. Further turfing and general cleaning has been done to advantage, while the labelling of specimens has been commenced.

Nursery work with ornamentals has increased rather too slowly to cope with the increased demand for plants, mainly due to the lack of water in the dry months. The number of ornamental plants distributed was 215.

6. GOVERNMENT STOCK FARM, UNION STATION.

The following animals were maintained at the Government Stock Farm during the year:—

1 Holstein Bull.
1 $\frac{3}{4}$ Holstein-Zebu Bull.
1 Sussex Bull.
1 Kentucky Jack Donkey.
3 Large Black boars and 2 sows.
1 Berkshire boar and 1 sow.

These animals generally kept excellent health and condition, and their services were fairly well utilised as shown in the return of Station services, tours and days on tour set out below :—

	Jack Donkey.	Holstein Bull.	⅜ Holstein-Zebu Bull.	Sussex Bull.	Large Black Boars.	Berkshire Boar.
Station Service ...	12	12	5	11	21	3
No. of tours ...	3	...	2	1	...	...
Days on tour ...	112	...	212	10	...	...

Under the heading "Large Black Boars" in the above table, the number of services shown is 21; of these, the old boar was responsible for 9, while the young boars imported from Trinidad in December 1938, and put to service during 1939 were responsible for the remaining 12. It was decided during the year to concentrate solely upon the Large Black breed in future.

Only eight (8) piglings were sold from the Station—at the nominal price of 10*s.* each—during 1939: it is felt that the advanced age of the old boars was responsible for the small litters obtained, hence the utilising of the services of the newly imported Large Black boars as early as was practicable. The age factor in successful breeding work of this kind indicates the necessity for more regular importations of young pure bred stock from the Government Stock Farm in Trinidad, which would also ensure the introduction of fresh blood. At the end of the year three sows were well advanced towards farrowing and it is well nigh certain that their litters will be considerably better. The demand for pure bred piglings continues unabated, and efforts were made to obtain two Large Black sows from Trinidad to augment the breeding herd: demand in the latter Colony was, however, too keen, and this introduction has had to be postponed for early in 1940.

There were unfortunate fatalities among the small herd of local donkeys kept for mating with the Kentucky Jack with a view to grading up to half and three-quarter bred animals for sale; three animals were lost, the cause of death being attributed by Captain H. V. M. Metivier, Senior Veterinary Officer, Trinidad, to pneumonia; subsequent discussion and investigation of the problem, however, has cast some suspicion on the poisonous weed *Spigelia anthelmia*, locally known as "breville", a note on which may be found in the "Agricultural News" Vol. XVI, No. 396, page 203. Although this weed is is fairly common in St. Lucia, it seems that stock avoid it on their grazing grounds; the danger lies in stall feeding, as the plant may be accidently cut and fed to the animals in the bundles of hand-cut fodder.

Captain Metivier inspected the Station in July during the course of his annual advisory visit, and again commented favourably on the condition of the animals; he emphasised, however, that still better use could be made of their services by the general public.

The planting of perennial fodder grasses on the Station has so far been confined to Guatemala Grass and Guinea Grass, but Uba Cane will also be planted on a proportionate scale in future. Funds did not permit of any extension of these areas during the year, but annual extension of the fodder area over the next few years is essential if the Station is ultimately to become entirely independent of outside sources throughout the dry season.

The purchase of a chaff cutter has resulted in some economy in fodder, especially in the months when supplies are scarce.

III. THE PLANT NURSERIES.

1. *Union Agricultural Station.* Nursery work with economic crops has been continued; citrus plants formed the bulk of the material distributed, but every economic crop of the Colony was well represented in the distribution record.

2. *Rabot Nursery, Soufrière.* Citrus propagation work was the principal function of this nursery during the year, some 5,000 sour orange stocks being planted out for this purpose. Production was chiefly in the form of budded limes, but Washington Navel oranges, Marsh Seedless grapefruit, and tangerines were also produced in accordance with demands. Other propagation work was done with mangoes, avocados, coffee, sugar cane varieties, and a variety of ornamentals. In addition useful trees for windbreaks, shelter and timber in the southern part of the Island were raised including *Cassia siamea*, *Grevillea robusta*, teak and mahogany.

A small plot of Adlay (*Coix lachryma-jobi*) an improved strain received from Ceylon, was sown at the nursery and produced an excellent crop, but the yield was greatly reduced by the depredations of mice and small birds. A small area will be planted for further multiplication again next year. Four types of groundnuts were tried out with fair success, but rats were particularly troublesome; this work will be continued next year. A good strain of Barbados black eye peas was sown and multiplied and later distributed to certain peasants in the area. Small beds of Havana, Zimmer Spanish and Kentucky Virginia tobacco were raised for demonstration and multiplication of seed. Some interest in the cultivation of this crop has been shown by a few peasants.

To meet a desire on the part of a few of the more progressive peasant proprietors to have their sons trained in nursery practice in all its phases, three apprentices were admitted to the nursery for the first time this year. The youths have shown great keenness and in view of the success of the scheme it will be made a regular annual feature in future. Other applications have been received but conditions do not permit of more than three apprentices receiving training at a time; the training is for one year.

3. *Barre-de-L'Isle Nursery.* The scope of this nursery has been further increased to deal with an increasing demand for coffee, cacao, and budded orange plants. It is of interest to record here the incidence of Panama Disease on stools of the I.C. 2 banana obtained from the Imperial College of Tropical Agriculture, Trinidad, in 1933; of a total of six stools, three have so far become infected. Other work included the planting out of a small plot of teak, which however is not growing satisfactorily on the acid red clay soil. Further teak seedlings are being raised for planting elsewhere, and a large number of Honduras Mahogany seedlings has been raised for planting out in a suitable area. A small plot of vanilla was established for multiplication of planting material. Four tonka bean trees (*Dipteryx odorata*) planted in different parts of the nursery are growing well.

4. *Quilesse Nursery.* This nursery was established primarily as a banana nursery some years ago, more or less in the centre of the proposed Quilesse (Murray Road) Land Settlement Area, in order to propagate disease free material of Gros Michel bananas which would subsequently be available for distribution to the settlers. When recommendations were made for the abandonment of even the modified land settlement scheme, it was suggested that this nursery should be allowed to continue, not only because it might serve a useful purpose in ensuring a source of disease free banana material so long as the banana industry continues, but also as an important centre with its nursery and equipment from which to conduct re-afforestation work.

The expenses of the nursery are now being met from revenue from the sale of bananas. Good work is being done in the raising of seedlings of economic timber trees particularly teak and Honduras mahogany. Attention is to be given next year to the possibility of using indigenous timbers such as Balata, Laurier cannelle and Laurier mabre to a much greater extent.

A plot containing 1,500 teak seedlings planted out between June and September is already showing up in a very promising manner.

IV. PESTS AND DISEASES.

The following summarised report has been prepared by Mr. R. G. Fennah, M.A., A.I.C.T.A., F.R.E.S., Citrus Pests Entomologist, and indicates the scope of his investigations during the year under review :—

For the past two years Citrus Weevils (Diaprepes spp.) have been less abundant than in the previous two-year period, and parasitism of the egg-masses of the weevil by indigenous parasites (*Tetrastichus* sp. nov. and *Ufens* sp.) has been high. In 1939 62% of the egg-masses collected were found to be parasitised, and in each of these masses more than half of the eggs were attacked. The increase in parasitism over that recorded in 1937 is attributed, though on little evidence, to increased laying of eggs by weevils outside the normal oviposition period which occurs between May and September.

Although conditions were very far from ideal, owing to high competition by local parasites, a further egg-parasite, *Tetrastichus marylandensis* Gir., was introduced from Dominica. In Dominica and Montserrat it has proved the most consistent of indigenous *Tetrastichus* and may prove to be as efficient in St. Lucia, if it can be established.

Among other methods designed to lessen the abundance of *Diaprepes* in citrus fields the propagation in large quantities of *Tephrosia candida* (which is avoided by adult weevils) has been taken up by some estates, and there is now no question that excellent stands of this valuable cover crop can be established in this Island.

The system of protecting the main roots by removing soil from around them and leaving them permanently exposed has been employed in some areas. No features objectionable from an agricultural standpoint have been noted, and the treatment, if carried out thoroughly, is a perfect means of insuring that no further attacks reach the main roots. It is worth pointing out, however, that trees which have already suffered severely from attack, and are in poor condition on that account, are likely to show little or no improvement for at least a year owing to the fact that until new roots are developed growth cannot be made. In places where attack on secondary roots is severe, soil should be removed from close around such roots, mixed dry with lead arsenate at a rate of approximately 1 lb. of lead arsenate to 10 cubic feet of soil, and tamped back in place. On the average tree only two or three ounces of the arsenical would be required, and would probably remain effective for more than one year. In very light soils, where a more efficient mixture can be obtained, less arsenate need be used.

A number of experiments on scale insects, (including principally *Coccus viridis* Green, *Lepidosaphes beckii* Newm. and *Pinnaspis minor straachani* Cooley) was carried out at Rabot Citrus Nursery to ascertain what factors ultimately control the increase and decrease of scale populations under local conditions. It is considered that parasites and entomogenous fungi are not more than seasonally important in most parts of the Island. In the experimental work, which is being continued, it has become clear that in St. Lucia (1) Green scale disappears from citrus placed under heavy shade ; (2) all scale attack is avoided or thrown off in the open field or under moderate shade only by healthy plants with sufficient functional root system to enable growth to proceed, and, in the case of *Coccus viridis*, by plants with yellowed foliage even though they are in poor condition ; (3) water and shade, singly or combined, or in conjunction with phosphatic, potassic, or nitrogenous manures applied to the soil in amounts normally sufficient to promote growth, are not able materially to benefit a plant heavily infested with scale-insects if it has a poor root system.

In June and July certain Coccinellid beetles including *Cryptognatha nodiceps* Muls., *C. simillima* Sic., *Pentilia egena* Muls., *Azya trinitatis* Marsh. and *Delphastus flaviceps* Cr. were introduced from Trinidad, with the

co-operation of the Department of Entomology of the Imperial College of Tropical Agriculture. These species are predacious on the Coconut Scale, *Aspidiotus destructor* Sign. Liberations were made at Corinth and Reduit Estates. A survey of the Coccinellid fauna of the Island has been in progress for some time, and is expected to provide a basis for planning further introductions. During the year a search was carried out for local parasites of the Coffee Leaf-miner, but none were found. Attempts were made to secure material of *Mirax insularis* Muesbk. in Dominica during June, and again in December, but were unsuccessful owing to the extremely low rate of parasitism at the time of examination.

After arrangement with the respective authorities, two shipments of adult Amazon flies (*Metagonistylum minense* Towns.) were sent from St. Lucia to St. Vincent in the early part of the year.

Of the miscellaneous pests of garden crops identified during the year, the following are the most noteworthy. The Acridiidae *Orphulella punctata* Deg. and *Osmilia flavolineata* Deg., and the Tettigoniid *Conocephalus saltator* Sauss. on hill rice and turnips; the Gryllid *Gryllus assimilis* F. on beans; on Solanaceae the Pentatomidae *Edessa meditabunda* F. and *E. cornuta* Burm., the former appearing in vast numbers at times, but being controlled at a late stage by fungi; the Coreidae *Corizus* (*Liorhyssus*) *hyalinus* F., *Megalotomus rufipes* Westw., *Phthia picta* Drury, and *Hymenophera* sp. (near *clavipes* F.) on beans and various Solanaceae. Water-cress in one area was found to be rendered unsightly by numerous feeding punctures caused by *Halticus citri* Ashm. (Miridae). The Tingitidae *Corythaica planaris* Uhl. and *C. gossypii* Uhl. were common on egg-plant and beans respectively. *Myzus persicae* Sulz. (Aphididae) was noted on cabbage, and *Aphis* sp. on egg-plant. The Coccidae *Pulvinaria urbicola* Ckll. and *Pseudococcus virgatus* Ckll. were common on peppers (*Capsicum* spp.), and a species of *Pseudococcus* near *brevipes* Ckll. was collected on the roots of Tonka bean. *Frankliniella insularis* Frankl. (*Thoipidai*) was widespread on various Leguminoseae. Among Lepidoptera may be mentioned *Urbanas proteus* L. (Hesperiidae) on beans (parasitised by *Apanteles leucostigmus* Ashm. and an apparently undescribed Tachinid related to *Calpodomyia* linearis Towns.). *Ecpantheria icasia* Cram. (Arctiidae), *Ascia monuste* L. (Pieridae), ubiquitous on cabbage, turnips and water-cress, the Noctuidae *Prodenia latifascia* Wlk. on onions, *Anticarsia gemmetalis* Hubn. on beans, *Laphygma frugiperda* S. & A. and *Heliothis obsoleta* L. on maize, and the Pyraustid *Lamprosema indicata* F. on leaves of beans. Of Coleoptera *Epitrix parvula* F. (Chrysomelidae) was common on various Solanaceae, and *Homophoeta albicollis* F. on beans; the Rutelid *Anomala inconstans* Burm. and the Dynastid *Cyclocephala tridentata* F. were taken in great numbers in the vicinity of pastures. Few collections were made of Diptera, and of these a species of *Agromyza*, which attacks onions, and forms mines in the leaves that are usually coiled, was very abundant in October, but was found to be parasitised by *Diaulinopsis callichroma* Cwfd. and a species of *Derostenus*.

Banana Borer (*Cosmopolites sordidus*)—Complaints were received from one or two banana growers of the losses sustained from borer attack, and practical methods of control were advised. Provided reasonable control measures are regularly followed, losses from this pest can be reduced to a minimum even in older plantations.

Panama Disease (*Fusarium cubense*)—The work of inspection of Banana cultivations for the control of Panama Disease was continued during the year, and a total of 556,538 stools was examined in 2,836 old and new gardens; the number of stools found infected was 17,826, revealing a percentage infection of 3·20 as compared with 2·86 per cent. in 1938. All cases in reasonably accessible areas were treated with gas-oil; but in the very inaccessible areas diseased plants were carefully "stifled".

The inspection staff has again received the willing co-operation of the planting community, and no enforcement of measures under the Plants Protection Ordinance was necessary.

A detailed analysis of the year's work is given below :—

PANAMA DISEASE DURING 1939.

New Cultivations (up to 3 years.)

	Gardens.				Plants.			
	Inspected.	Diseased.	Per cent.		Inspected	Diseased.	Per cent.	
			1939	*1938*			*1939*	*1938*
Castries ...	256	171	66·8	53·9	29,525	992	3·4	3·0
Dennery ...	304	212	69·7	68·8	81,060	2,399	2·9	3·3
Micoud ...	648	233	35·99	33·6	100,250	1,351	1·3	0·9
Soufrière ...	487	172	35·3	36·5	34,816	786	2·2	1·2
Anse-la-Raye ...	191	117	61·2	48·4	24,000	649	2·7	3·8
Gros Islet ...	43	24	55·8	...	5,925	180	3·0	...
Canaries ...	176	57	32·4	70·4	10,692	197	1·8	2·0
Choiseul ...	376	110	29·2	...	18,282	415	2·2	...
Laborie ...	246	87	35·3	45·3	16,333	288	1·7	2·3
Vieux-Fort ...	109	43	39·4	...	11,186	162	1·4	...
	2,836	1,226	43·2	45·2	332,069	7,419	2·23	2·10

Old Cultivations (over 3 years.)

	Gardens.				Plants.			
	Inspected.	Diseased.	Per cent.		Inspected	Diseased.	Per cent.	
			1939	*1938*			*1939*	*1938*
Castries ...	125	96	76·8	61·3	12,855	336	2·6	2·1
Dennery ...	61	53	86·8	65·6	12,460	663	5·3	5·1
Micoud ...	714	424	59·3	57·7	58,320	3,680	6·3	3·7
Soufrière ...	576	410	71·2	81·3	40,725	2,502	6·1	7·5
Anse-la-Raye ...	93	69	73·1	62·0	12,245	254	2·1	3·0
Gros Islet ...	54	16	29·6	...	12,975	70	0·5	...
Canaries ...	254	161	63·3	79·5	23,240	1,008	4·3	7·2
Choiseul ...	391	191	48·8	...	21,173	807	3·8	...
Laborie ...	300	185	61·6	69·3	23,360	815	3·4	5·4
Vieux-Fort ...	111	63	56·7	...	7,116	272	3·8	...
	2,679	1,668	62·3	68·2	224,469	10,407	4·63	5·00

Visit of Cotton Pests Entomologist.—Mr. F. A. Squire, B.Sc., A.I.C.T.A., visited the Colony from March 29th to April 2nd to give general advice on the control of cotton pests in view of the possible development of a small cotton industry. As a result of his brief visit he saw no reason why the common pests of cotton should not be as effectively controlled as in the other islands provided strict attention was paid to an adequate close season, the planting season restricted to not more than six weeks, adequate spraying to control the cotton leafworm, and the eradication of stainer hosts in cotton districts.

V. AGRICULTURAL EDUCATION.

(a) Peasant Advisory Service.

Increased attention was paid by the Department to this important work and more regular talks and demonstrations were held in all parts of the Colony; judging by the attendance at most of these meetings they are much appreciated by the peasants. The appointment of a Banana Instructor in August enabled this service to be supplemented in the more inaccessible areas, where the Panama Disease inspectors continue to give advice and encouragement directed towards a better standard of peasant agriculture. As opportunity offered these inspectors have also carried out the top-working of seedling citrus and mango trees; during 1939 a total of 122 citrus were top-worked with the Washington Navel variety and 905 mangoes were top-worked with the Julie variety. Mention might be made also of the formation of a Peasants' Agricultural Society in Soufrière during June, one of the chief objects of which is to encourage co-operation amongst the members; similar societies in the other centres could serve a useful purpose in promoting agricultural co-operation and development.

(b) Pupil Teachers' Examination in Agriculture.

This examination was held as usual during the second half of the year, a total of thirty-four teachers being examined. A report on the results was submitted to the Inspector of Schools, but in order to curtail the length of this Report details are not given.

(c) Agricultural Instruction in the Primary Schools.

Regular visits to the schools were paid by members of the Department throughout the year for the purpose of giving interesting and practical talks to the children, and to give help and advice to the Head Teachers in connection with the maintenance of school gardens.

The thirty-first annual examination of the Primary Schools in Agriculture was conducted by the Agricultural Officers and a full report submitted to the Inspector of Schools.

The customary publication in detail of the results of the annual examination has been suspended for reasons of economy.

AGRICULTURAL CADETS.

Three Cadets were in residence at Union Station throughout the year; all took the first-year course.

No changes were made in the modified curriculum as adopted over the past two years, and a considerable proportion of the time available was devoted to practical work in field or nursery under the direction of the officer in charge, Foreman and Nurseryman.

The final examination was held in December, with the following results:—

Name	*Practice*	*Theory*	*Total*	*Per cent.*
James Nicholls ...	72	56	128	64
Winston Wells ...	66	38	104	52
Jones Modeste ...	47	41	88	44

COMMENTS :—*Practice :*—The usual difficulty of lack of expression of the part of the Cadets was again encountered. Strictly routine duties, such as budding, grafting and general nursery work were performed with comparative ease and show a good standard of efficiency, but a noticeable weakness was the observational powers of the Cadets in regard to other branches of work with which they are regularly associated.

Theory :—A fairly difficult paper was well attempted, and the response was satisfactory.

General :—Conduct good.

VI. PUBLICATIONS, CORRESPONDENCE AND ORGANISATIONS.

The following publications were prepared by the Department for local distribution during the year—

Pamphlet No. 1 "Beekeeping for Beginners" in co-operation with Mr. Chas. DuBoulay, Manager, Marquis Estate.

Leaflet No. 2 "Simple Method for Controlling Intestinal Parasites in Cattle, Sheep and Pigs.

Leaflet No. 3 "Two Methods of Composting suitable for Small-Holdings".

A pamphlet on "Corn or Maize Cultivation" was being printed. An article on "Forestry in St. Lucia" was prepared for The Caribbean Forester of Puerto Rico.

Memoranda were prepared during the year for the Secretary of State for the Colonies, International Institute of Agriculture, Rome; and the St. Lucia Banana Association. A comprehensive memorandum on "The Present Position of the Lime Industry of St. Lucia" was prepared by the Assistant Agricultural Superintendent at the instance of the Committee of Management of the St. Lucia Limes Association for the Acting Commissioner of Agriculture. Annual returns and revisions were furnished for the following publications—Blue Book of St. Lucia; West Indian Year Book; Economic Survey of the Colonial Empire; Annual Colonial Report, and other miscellaneous statistics. The usual monthly returns were submitted to the Advisory Department of Imperial College of Tropical Agriculture in Trinidad.

593 Minute Papers, 1,105 incoming letters and 1,545 outgoing letters were dealt with during the year, indicating a considerable increase in the volume of correspondence and general clerical work.

A large number of bulletins and reports were regularly received from Departments of Agriculture and other agricultural institutions in all parts of the world, and these are gratefully acknowledged.

The Agricultural Superintendent was appointed a member of the Peasants' Loan Committee and the Food Control Committee during the year; also Competent Authority for the acquisition of land under Part VI, Section 51, Defence Regulations, 1939.

The following organisations and committees held meetings during 1939, which were attended by the Agricultural Superintendent or the Assistant Agricultural Superintendent :—

The Board of Agriculture; The Food Control Committee; The St. Lucia Agricultural and Commercial Society; The St. Lucia Limes Association; The St. Lucia Coconut Growers' Association and Board of Control; The St. Lucia Banana Association and Board of Control; The Board of Education; The Storm Relief Committee; The Permanent Exhibition Committee; and The Peasants' Loan Committee.

SECTION III. FINANCIAL STATEMENT.

Expenditure.

	£	s.	d.
Head XVII. Agriculture and Forests:—			
Personal Emoluments	1,723	11	7
Travelling Allowances	377	18	0
Union Station—Labour	358	18	9
Union Station—Experimental Plots	99	11	6
Seeds, plants & manures	168	8	11
Government Stock Farm	168	4	7
Miscellaneous Requisites	55	1	3
Banana Nurseries	101	7	3
Printing, including publicity work & purchase of books ...	11	15	10
Minor repairs to buildings	9	14	4
Transport of plants	19	11	6
Panama disease—Control	221	15	0
Agricultural Cadets	90	4	11
Visit of Veterinary Surgeon	39	12	4
Agricultural Society:—Grant-in-Aid	20	0	0
Citrus Nurseries	249	17	7
Contribution to Castries Town Board for King George V. Memorial Park	25	0	0
Crates	325	11	3
Transport—Forest Watchers	2	13	6
	£4,068	18	1
Head XXV. Colonial Development Schemes.			
Land Settlement	246	10	5
	£4,315	8	6

Revenue.

			£	s.	d.
Head III.	13	Cess on bananas	217	4	5
	14	Cess on citrus products	225	19	1
Head IV.	16	Sales from Agricultural Stations	200	8	10
	17	Sales from Banana Nurseries	3	1	3
	19	Fees for fruit Inspection	63	18	3
Head VII.	1	Government Cold Storage Plant	379	9	5
	2	Government Marketing Depot	48	18	4
Head XI.	2	Instalment, sales of lot, Reunion Land Settlement ...	11	12	0
	6	Sale of Crates	357	9	8
Head XIV.	3	Land Settlement	380	18	9
			£1,889	0	0

WORK UNDER COLONIAL DEVELOPMENT FUND GRANTS—AGRICULTURAL DEPARTMENT.

Recommendations were made for the abandonment of the Land Settlement Scheme, after further careful investigations revealed that even the modified scheme could not be developed satisfactorily. Consequent upon these recommendations all further road work was stopped, apart from consolidating a small section of uncompleted road leading to the Troumassée River bridge.

SECTION IV. LEGISLATION AFFECTING AGRICULTURAL INDUSTRIES.

1. Plant Quarantine.

EXTERNAL—IMPORT PROHIBITIONS.

The introduction of all plant material is regulated under the Plants Protection Ordinance No. 14 of 1916 (Revised), and cognate subordinate legislation. This quarantine work involves the inspection of all seeds, plants, and miscellaneous planting material and containers introduced into the Colony during the year, and is carried on in conjunction with the Post Office and Customs authorities. The introduction of soil, fruit and vegetables is further regulated by legislation under the Customs Amendment Ordinance No. 2 of 1920.

A new Plant Protection Ordinance (No. 30 of 1939) was enacted during December, and this repeals Ordinance No. 14 of 1916 (Revised) and Ordinance No. 3 of 1931.

A summary of legislation affecting agriculture was included in the Annual Report for 1938; the following changes and additions have been made during 1939—

Statutory Rules & Orders No. 13 of 1939, prohibits the importation of banana plants or parts from any place beyond the limits of the Colony to guard against Cercospora Leaf Spot Disease.

Statutory Rules & Orders No. 15 of 1939, prohibits importation of oil sands from Trinidad to guard against witchbroom disease of cocoa.

Statutory Rules & Orders No. 6 of 1939, controlling and regulating the marketing of sugar.

APPENDIX I.

REPORT ON THE WORK OF THE GOVERNMENT MARKETING DEPOT.

1. Inspection of Export Produce.

The inspection of produce for export as governed by the Fruit Export Legislation was continued by the inspection staff. The total number of packages inspected amounted to 14,895 and inspection fees collected totalled £63 18 3; the corresponding figures for the 5 year period 1935—1939 are shown below:—

Year	1935	1936	1937	1938	1939
Packages inspected	15,248	14,939	15,037	15,754	14,895
Inspection fees ...	£80 11 2	£67 19 8	£65 7 1	£68 12 0	£63 18 3

Fruit and vegetable exports to Trinidad were also inspected and certificates for freedom from soil, leaves, etc., given: 77 such certificates were furnished during the year.

Exporters have continued to co-operate fully with the inspection staff, and this help is gratefully recorded. The number of licensed packing houses in operation during the year was 4, together with the two sheds under the control of the Depot.

2. Depot Operations.

Exporters continued to avail themselves of the facilities offered by the Depot, and it is gratifying to record an increase in the volume of work over 1938. All types of produce were handled. The resulting revenue is shown, together with expenditure, under the section dealing with Depot Finances.

A feature of the year's work has been the experimentation carried out whenever possible with the artificial colouring of citrus fruit by means of ethylene gas; in view of the small quantities of citrus fruit that pass only occasionally through the Depot, any thorough investigation has not so far been possible; preliminary observations made during 1937 and 1938 have, however, been further tested, and the results achieved have attracted the attention of exporters to this method of improving their produce; the standard concentration of ethylene now used is 1 in 5,000, and a high colour is obtained in the course of 18—24 hours; it is considered when larger quantities of fruit have to be treated that exposure to the gas for two periods of 8 hours, with an intervening period of ventilation, will prove to be the most successful procedure.

(a) Experimental Shipments of Fruit from the Depot.

Three experimental shipments were made during the year; these comprised (1) 60 lugs of Julie mangoes in mid-June, (2) 275 lugs of Julie mangoes in mid-August and (3) 15 lugs of Avocado pears by the same opportunity as (2). At the same time, trial was made of the "plum basket" pack as mentioned in this report for 1938. The results of these shipments were definitely poor; some fruit arrived soft, while the remainder met warm

weather, ripened quickly, and had to compete with other soft fruit on the market; in addition the political situation had anything but an encouraging effect on sales. The "plum basket" pack was not a success; bruising was still noted, and the general comments were that the pack was merely the same as the ordinary lug pack with the same disadvantages. This method of pack will not be repeated; instead enquiries have been made as to the type of pack found successful in Jamaica, namely, the mango tray. Details of the shipments are given below:—

Fruit Shipment.

Quantity: 60 lugs Julie mangoes.

Shipped: 17th June, 1939, S.S. "Inanda".

Comments: Two experimental packs used—plum basket and ordinary (lug). Packing, selection and grading as in previous years. The general condition on arrival was satisfactory, though some boxes showed waste apparently caused by bruising, and some fruit showed slight stem rot; opening prices were from 5*s.* to 8*s.* per lug, but owing to the competition from other mangoes on the market, and the rapid development of wastage, a number of trays became entirely valueless; the final figures revealed a loss of £6 18 4 as shown:—

Expenses on 60 lugs mangoes:—

	£	*s.*	*d.*	
Crates wraps etc.	3	2	11	—26·5% of total cost.
Packing & labour		17	8	— 7·4% do.
Inspection, precooling, cable etc.		13	1	— 5·6% do.
Freight	4	10	0	—37·9% do.
Insurance, Commission, repacking ...	2	13	8	—22·6% do.
Total	£11	17	4	
Proceeds as per a/c. sales	4	19	0	
Debit balance	£6	18	4	

A comparison of the two different packs used is also given:—

Item.	*Plum basket pack.*				*Ordinary pack.*			
	£	*s.*	*d.*	*Pence per lug.*	£	*s.*	*d.*	*Pence per lug.*
Local expenses ...	2	18	6	21·60	1	15	2	15·10
Freight	2	8	0	18·00	2	2	0	18·00
Insurance, Commission, etc.	1	8	2	10·90	1	5	6	10·90
Total ...	6	14	8	50·50	5	2	8	44·00
Proceeds of sale	2	7	0	17·50	2	17	0	22·28
Debit Balance ...	4	7	8	33·00	2	10	8	21·72

N.B.—Cost of fruit if bought at 6*d.* per dozen not included.

Second Shipment.

Quantity: 275 lugs Julie mangoes.

Shipped:—12 August, 1939, S.S. "Inanda".

Comments:—The consignment was divided between two brokers. Picking, selection and grading as before, but more woodwool was used in view of wastage through bruising reported from the first shipment. One broker reported that the fruit was much bruised in spite of the extra woodwool used; quality was good, but warm weather resulted in rapid ripening, while the uncertainty of the political situation, with its depressing effect on trade in general was responsible for very slow sales especially of such a semi-luxury item. The other broker reported that the fruit had arrived in a ripe and overripe condition and was unsaleable; it had at the same time to compete with an abundance of soft fruit on the market; these observations were confirmed by a member of the staff of the West India Committee in a report dated some 3 days after the arrival of the fruit. Improvement in packing and grading was, however, recorded. The final statement, showing a loss of £36 3 11, is appended below:—

Expenses on 275 lugs Julie mangoes.

	£	s.	d.
Crates, wraps, etc.	11	3	7
Packing & labour	4	0	3
Inspection, precooling, cable etc.	2	8	8
Freight	21	7	6
Insurance, Commission, repacking, etc. ...	8	0	5
	48	0	5
Proceeds as per a/c. sales ...	10	16	6
Debit Balance	£36	3	11
Number of lugs	275		
Number of fruit	8,960		
Loss per fruit		0·96*d.*	

N.B.—Cost of fruit if bought at 6*d.* per dozen not included.

Third Shipment.

Quantity :—15 lugs Avocado pears.

Shipped :—12th August, 1939, S.S. "Inanda".

Comments :—Grading and packing as generally done for other export markets. The broker's report indicated that all 15 lugs arrived in a ripe condition; the report by the West India Committee stated that the fruit was "practically all bad—quite black and soft". As a result of these conditions the fruit was saleless, and the trial resulted in a loss of £3 1 10 or 4*s.* 1½*d.* per lug.

It is interesting to compare the above results with those obtained by a local exporter who shipped 5 lugs of Avocados to the same broker by the same opportunity; the report by the West India Committee was as follows :—

"The mark arrived in good condition and a quick sale was made, but the "Government" fruit was practically all bad. It is difficult to account for such diverse conditions as both marks arrived by the same steamer". Except for the fact that the "Government" fruit was packed by the Depot, both lots of fruit were identical as regards packing, and they were subject to the same inspection; in both cases fruit was purchased from various growers, and it is perhaps indicative of the wide variation in the shipping qualities of local fruit when one small shipment can sell for 9*s.* 10½*d.* per lug (a selling price of 6*d.* per fruit) whereas a larger shipment, made up of a wider selection of fruit, will fail to keep condition.

(b) *Depot Finances.*

The estimate expenditure for the Depot for 1939 was £318 0 0 of this the sum of £155 7 7 was actually expended during the year. In addition, the revolving Stock Account for the purchase of crates and packing materials continued in operation; the Balance Sheet for the year ended December 31st is presented below, and shows a total turnover of £573 9 0 with a credit balance of £46 6 11 (1938—£39 18 3) which was credited to General Revenue. The scale of charges remained unchanged.

Balance Sheet from Valuation of Stock on 31.12.39 at Cost.

Particulars.	Amount. £	s.	d.	Particulars.	Amount. £	s.	d.
Stock at 1.1.39 ...	194	17	8	Crates Sold	350	16	6
Outstanding a/cs. at 1.1.39 ...	6	13	2	Profit transferred to Revenue	46	6	11
Import Duty	13	3	2	Outstanding at 1.1.39, settled	6	13	2
Purchases & Labour ...	312	8	1	Value of Stock at 31.12.39 ...	169	12	5
Profit	46	6	11				
	£573	9	0		£573	9	0

The following is a summarised statement of Expenditure and Revenue of the Depot during the year :—

EXPENDITURE.

	£	s.	d.
Head XVIII. A. GOVERNMENT MARKETING DEPOT.			
Personal Emoluments	58	0	0
Labour	29	2	6
Part cost of running lorry	11	15	8
Maintenance and equipment	7	7	10
Shipments and Marketing	49	1	
	£155	7	7

REVENUE.

	£	s.	d.
Profit on Crates	46	6	11
Head XI—19 Fees for fruit inspection	63	18	3
Head VII— 2 Government Marketing Depot	48	18	4
Head VIII— 3 Rent other property. (Packing shed rental) ...	2	6	5
	£161	9	11

APPENDIX II.

GOVERNMENT ICE AND COLD STORAGE PLANT.

The Cold Storage Plant continued to be used for the precooling of exports and for local cold storage, the revenue derivable under these heads being respectively £11 6 10 and £190 11 5, the corresponding figures for 1938 being £11 3 7 and £267 6 6. The total revenue for the year's working was £379 9 5, a decrease of £116 0 4 as compared with the previous year.

The Ice Factory manufactured 92 3/10 tons of ice, the value of ice sales amounting to £166 14 2.

The statement of the working of the Plant for the year 1939 is shown below :—

STATEMENT OF THE WORKING OF THE GOVERNMENT ICE AND COLD STORAGE PLANT FOR 1939.

Dr. Particulars.	£	s.	d.	*Cr.* Particulars.	£	s.	d.
Salaries	195	4	3	Ice sales	166	14	2
Labour & mechanic ...	89	7	0	Rent	6	1	0
Stores & spares ...	67	2	10	Cold Storage dues ...	190	11	5
Contingencies	9	13	1	Precooling	11	6	10
Electric power	226	16	0	Battery charging ...	4	16	0
				Outstanding :			
				Cold Storage dues ...	25	2	1
				Ice sales	8	14	6
				Stock on Hand :			
				Unused Stores (approx.) ...	76	0	0
				Debit Balance	98	17	2
	£588	3	2		£588	3	2

As the Plant continued to run at a loss, instructions were received from the Secretary of State to close it down at the end of the year. While arranging for this, the question of ensuring the continuation of the Plant under private enterprise was investigated, and approval was obtained from the Secretary of State to lease the Plant for a period of 5 years, pending a satisfactory sale being effected. Suitable arrangements were made accordingly, and the Plant was handed over to the lessee on January 15th, 1940; the sum of £15 19 9 was spent on the Plant during January, 1940, prior to handing over.

APPENDIX III.

REPORT ON REUNION ESTATE LAND SETTLEMENT, AND CHOISEUL VILLAGE EXTENSION SCHEMES.

(a) Reunion Small-Holdings Scheme.

The remaining lot in this Scheme was sold in July, 1939 for £7, payable by instalments; of this amount £3 had been paid at 31.12.39.

(b) Choiseul Village Extension Scheme.

Four lots under this Scheme were sold during the year on instalment systems, leaving 9 lots still to be sold; one of these is the site of the old school garden of the Choiseul Juvenile Boys' School vacated when the school transferred to a new site. A sum of £8 12 0 was collected in dues.

APPENDIX IV.

THE MURRAY ROAD AND LAND SETTLEMENT SCHEMES. (COLONIAL DEVELOPMENT FUND).

Survey for sub-division of the modified scheme commenced in March and every effort was made to locate suitable land for the purpose but without success, principally on account of the topography of the area which is regarded as too precipitous for any scheme of permanent or even long-term agricultural development. Small scattered areas were found, the alienation of which would be most unwise owing to the difficulty and expense of effectively controlling their development on proper lines. Approval was, however, obtained for the continuation of the banana nursery at Quilesse so that a source of disease-free banana planting material would remain available to banana growers; also because of the excellent situation of the nursery as a centre for forest control work and re-afforestation schemes which may be planned in future.

Expenditure under this head for the year amounted to £246 10 5, and revenue from the sale of bananas grown at the Nursery amounted to £380 18 9.

APPENDIX V.—METEOROLOGICAL OBSERVATIONS.

STATION, CASTRIES, ST. LUCIA, B.W.I.

ht.=3′ 0″ *hr.*=1′ 0″. STATION CASTRIES.

Month.	Rainfall (inches)			Weather.		Wind. No. of Observations. (at 7 a.m., 12 noon, & 5 p.m.)								
	Total	Max.	Date	Days of Rain	Days of Gales.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm
January ...	5·36	1·69	30th	20	0	—	11	49	27	2	—	—	—	4
February	3·61	·72	21st	17	0	—	5	54	17	1	1	—	—	6
March ...	4·66	·50	11th & 18th	20	0	—	8	76	7	—	—	—	—	2
April ...	5·14	1·21	9th & 11th	14	0	—	8	63	17	—	—	—	—	2
May ...	4·04	1·47	23rd	13	0	—	13	45	32	1	—	—	—	2
June ...	15·99	8·91	19th	26	0	—	16	51	21	1	—	—	—	1
July ...	5·05	·89	28th	21	0	—	5	56	28	2	—	—	—	2
August ...	6·58	1·46	15th	21	0	—	11	35	37	6	—	—	—	4
September	7·41	·93	8th	19	0	—	4	37	43	—	—	—	—	6
October ...	11·83	1·97	12th	20	0	—	11	39	34	1	2	—	—	6
November	11·32	3·22	28th	19	0	—	4	25	49	4	1	—	—	7
December	4·51	·90	17th	22	0	—	3	38	42	—	—	—	—	10
Year ...	85·50	8·91	19th June	232	0	—	99	568	354	18	4	—	—	52

ht.=Height of therm. above the ground in feet. hr.=Height of the rainguage above the ground in feet.

LONGITUDE=60° 59′ 49″ W. LATITUDE=14° 0′ 36″ N. HEIGHT ABOVE MEAN SEA LEVEL=10ft.

Month.	Air Temperature.						Absolute Max. and Min.				Relative Humidity (% Regnault's factor.)		
	7 a.m.	12 noon	5 p.m.	Mean	Means of Max.	Means of Min.	Max.	Date	Min.	Date.	7 a.m.	12 noon	5 p.m.
January ...	71·5	78·7	76·0	75·4	83·6	70·1	86	*	67	††	93	73	80
February ...	68·6	77·1	74·1	73·3	80·9	68·0	85	5th & 8th	60	19th	95	71	78
March ...	70·2	78·5	76·1	74·9	82·0	69·2	85	†	62	22nd	93	66	73
April ...	72·6	79·8	77·3	76·6	83·2	70·2	86	30th	68	1st	88	67	74
May ...	74·0	81·9	79·2	78·4	85·2	71·7	88	‡	68	31st	90	64	72
June ...	75·0	81·4	78·8	78·4	85·4	72·1	89	17th	70	‡‡	88	70	77
July ...	75·2	82·2	80·0	79·1	85·7	72·5	88	27th	71	19th	88	69	74
August ...	75·1	83·7	81·5	80·1	87·1	73·5	89	§	71	§§	88	66	71
September	74·9	83·7	81·0	79·9	87·1	72·8	90	29th & 30th	70	9th	90	67	73
October ...	74·2	82·3	79·5	78·7	87·1	72·6	91	‖	70	4th	93	71	79
November	73·3	82·3	79·1	78·2	86·7	72·2	90	10th	70	13th & 28th	95	70	80
December ...	72·8	82·3	78·3	77·8	86 5	71·6	89	¶	69	16th & 31st	95	70	80
Year ...	73·1	81·2	78·4	77·6	85·0	71·4	91	**	60	19th Feb.	91	69	76

* 2nd, 3rd, 6th, 8th, 10th, 13th, 15th, 16th, 17th, 18th, 19th & 22nd. † 4th, 15th, 16th, 22nd & 29th.
‡ 8th, 18th & 20th § 5th, 6th 8th, 9th, 12th, 14th, 21st, 22nd, 24th, 25th & 31st.
‖ 3rd, 5th & 11th. ¶ 2nd, 5th, 6th & 9th. ** 3rd, 5th & 11th October.
†† 8th, 9th & 24th. ‡‡ 1st, 2nd & 20th. §§ 7th, 8th, 10th, 16th, 18th & 26th.

METEOROLOGICAL CONDITIONS.

Rainfall: The total rainfall recorded at King George V. Park (previously known as the Botanic Gardens), Castries, for the year 1939, was 85·50″ as compared with 128·90″ in 1938; this was 5·33″ below the average rainfall for the 50 year period (1890—1939), the average now being 90·83″ per annum. Maximum precipitation for Castries occurred on 19th June, when a total of 8·91″ was recorded. The highest maximum precipitation for the Colony in general was 10·55″ recorded on 19th June at the Union Agricultural Station. The rainfall was not well distributed; although that for June was considerably in excess of the average, reference to the annual rainfall returns will show that most of the rain for that month fell on one day, namely 19th June, when a sharp storm broke over the Colony.

Weather: Mainly dry and fine, and free from thunderstorms. Although weather conditions were more normal than last year, the coastal areas, northern and southern extremities especially, suffered to some extent from periods of dry weather. On the other hand the wetter areas benefited from the drier conditions after the heavy rains of 1938.

Temperature: The mean noon shade temperature was 81·20°F., the maximum temperature was 91°F., and the minimum temperature was 60°F., an increased range of 31°. Night temperatures were lower during the period February to April, otherwise they followed closely those of 1938. Humidity was slightly lower.

Stations: The number of rainfall stations recording during the year was 40, an increase of two, although one station ceased recording at the end of July. It is regretted that in one or two cases incomplete returns are shown through monthly returns not having been received. The thanks of the Department is due to all recorders for their continued co-operation.

APPENDIX VI.

RAINFALL RETURNS, 1939.

Observation Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Maximum in one day and date.		No. of days of rain.
	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins	Ins.		
Gros Islet, Reduit Estate	1·79	1·40	1·93	2·01	·54	11·67	3·48	4·36	4·01	6·74	12·38	1·27	51·58	5·75	8th Nov.	100
Castries, Corinth ,, ...	3·92	2·53	2·87	3·10	2·61	14·49	5·19	5·61	5·40	12·14	15·24	3·32	76·42	10·08	19th June	189
*Marquis Estate ...	...	...	...	...	1·68	11·61	5·20	5·25	7.42	12 64	11·85	2 50	58·15	7·85	,,	67
†Union Experimental Stn.	5·91	1·91	3·80	3·48	3·17	15 27	4·62	6·82	7·18	9·20	12·52	3·43	77·31	10·55	,,	285
Choc Estate ..	3·90	1·74	2·70	2·41	1·37	10·25	3·01	5 51	6 01	7·42	9·07	2·12	55 51	7·10	,,	151
King George V Mem. Park	5·36	3·61	4·66	5·14	4·04	15·99	5·05	6·58	7·41	11·83	11 32	4·51	85 50	8·91	,,	232
The Barracks, Vigie ...	3·97	2·71	3·23	2·67	2·91	12·36	3 80	4·94	5·66	9·92	8·67	3·07	63·91	7·54	,,	197
La Toc .	4·28	2·42	3·52	2·97	2·67	13·55	3·55	5·06	5·79	9·10	9·40	3·58	65·89	8·84	,,	298
Soucis Est., Cul-de-Sac	6·95	1·25	6·80	4·30	2·98	16·04	5·25	8·74	7 81	11·24	16·78	5·92	94·06	9·50	,,	146
*Crown Lands Est., ,,	8·48	3·61	7·09	9·55	3·72	...	9 89	9·68	9·40	16·75	20·76	8·84	107 77	3·30	9th Nov.	246
*Mont D'Or Est., Roseau	5·50	3·10	2·84	2·90	2·06	...	5·98	8·38	6·09	9·90	12·86	4·66	64·27	4·47	,,	239
Belair Estate, ,, ...	3·38	2·45	2·53	1·48	·88	10·99	4·04	5·15	4·77	8·79	10·22	3·73	58·41	8·50	19th June	224
Vanard ,, ,, ...	5·12	3·92	4·64	3·75	2·30	14·11	6·23	8·93	7·58	12·07	15·75	4·83	89·23	8·57	,,	186
Roseau ,, ,, ...	5·80	3·20	3·87	2·45	2·05	12·64	5·46	5·86	6·19	10·21	11·06	4·37	73·36	8·23	,,	218
†Barre de l'Isle Nursery	9·95	4·59	5·19	3·81	3·53	16·77	9·25	8·30	9·51	14·77	17·37	6·53	109·57	9·90	,,	311
Soufrière, La Perle Estate	3·16	2·45	3·43	3·05	3·22	12·85	5·90	5·95	6·16	7·43	6·15	4·71	64·46	5·95	,,	158
Ruby Estate ...	5·24	2·75	2·96	4·02	2·70	13·96	6·47	7·06	5·92	10·72	7·33	4·37	73·50	6·35	,,	136
Fonds Doux Estate ...	4·59	2·50	3·52	2·60	3·66	10·80	6·41	6·95	5·75	9·55	8·42	3·95	68·70	4·76	,,	252
Union Vale ,, ...	3·42	2·19	2·53	2·44	2·78	10·23	5·53	7·41	5·68	9·27	6·76	3·07	61·31	4 80	,,	184
Beausejour ,, ...	6·24	3·94	4·69	4·21	4·81	12·83	7·68	7·13	7·31	11·87	10·49	6·50	87·70	5·06	,,	313
Belle Plaine ,, ..	6·58	4·35	4·80	4·39	4·70	13·13	7·75	7·18	7·39	14·15	11·28	6·40	92·10	4·37	,,	311
Rabot Estate ...	4 62	3·37	3·30	3·68	3·32	10·29	6·53	7·75	7·41	10·42	9·62	4·90	75·21	3·70	,,	257
†Rabot Nursery ...	4·58	3·58	3·75	3·70	3·58	9·85	7·11	7·83	6·43	10·52	8·97	3 98	73·88	3·75	,,	306
†Quilesse ,, ...	9·45	8·08	6·84	7·10	6 79	17·33	10·35	8·20	8·76	13·61	13·82	8 65	118·98	6·98	,,	339
Choiseul, *Morne Lezard Est.	4·90	2·21	3·44	2·15	2·47	8·86	4·35	7·33	6·27	14·38	...	4·83	61·19	4·50	,,	116
Park Estate ...	5·91	3·46	3·70	3·19	4·35	10·81	6·44	8·07	6·78	13·29	9·92	4·72	80·64	4·50	,,	247
Woodlands Estate ...	5·70	3·78	3·94	3·67	5·15	13·17	7·55	6·73	9·69	14·91	4·49	5·41	84·19	7·08	,,	302
Londonderry Estate ...	4·69	2·09	2·95	1·84	2·01	9·76	5·50	8·69	7·41	14·08	9·09	3·69	71·80	4·56	,,	182
Laborie, Giraud Estate ...	5·08	2·65	3·73	2·12	3·45	11·91	6·12	8·89	6·97	13·82	10·09	4·53	80·36	5·30	,,	184
Black Bay Estate ...	2·81	2·48	2·07	1·81	1·54	8 46	4·58	3·43	3·65	10·93	5 90	..	47 66	4 60	,,	190
Vieux-Fort, Moule-à-Chique	2·28	1·19	1·68	1·09	1·06	5·56	3·32	2·02	3·55	9·76	4·22	3·28	39·01	2·95	8th Oct.	104
‡St. Urbain Plantation...	...	...	...	...	1·92	6·95	6·23	2·54	3·78	9·13	...	..	30·55	4·00	19th June	102
Vieux-Fort Factory ...	1·54	2·41	1·60	1·39	1·09	7·09	5·23	2·14	3·92	9·55	5·90	3·70	45 56	4·18	,,	167
Retraite Estate ...	3·85	2·93	2·81	1·64	1·78	8·65	4·87	3·75	4·47	10·13	6·56	3·28	54·72	4·90	,,	201
Micoud, Trounassée Est.	3 05	2·00	2·50	·95	2·00	10·87	6·50	1·25	8·06	10·01	4·75	3·05	54·99	8·50	,,	70
Mamiku Estate ...	2·73	1·34	1·24	1·24	1·65	9·97	3·53	3·81	4·62	6·85	6·15	3·45	46·58	6·75	,,	205
*Orangerie Estate ...	4·32	2,05	1·49	2·56	2·02	9·83	7·60	...	...	..	...	...	29·87	5·31	,,	126
§Fonds Estate ...	...	...	...	...	...	...	...	...	5·11	7·99	7·50	3·23	23 83	1 73	24th Oct.	97
Dennery, Prospect Est. ..	5·71	2·66	2·87	2·45	3·04	13·34	5·55	6·44	8·54	7·40	13·32	5·28	76·60	8·45	1th June	306
Border Estate ...	1·52	1·36	2·22	1·26	·73	2·87	4·30	4·42	4·93	7·18	11·63	2·61	44·04	2·50	27th Nov.	222

* Record not complete. † Departmental May. § Started in September. Quilesse Nursery. Union Experimental Station. Quilesse Nursery.

Maxima== 118·98 10·55—19th June. 339.

REVISED PRICES OF NURSERY PLANTS AND SUPPLIES.

1. The prices of plants do not include the cost of the box or package, for which a charge will be made if not returned to the Department. The cost of delivery will, as far as possible, be included in the prices. Exceptions to this rule will be made at the discretion of the Agricultural Superintendent.

2. All prices specified are for plants of standard quality. The prices of plants not included in this list will be fixed by the Agricultural Superintendent.

3. An addition of 100 per cent. is made on the price of all plants supplied for export from the Colony.

4. No plants are supplied on Public Holidays.

5. At least six months previous notice must be given when large numbers of such plants as bananas, coconuts, coffee, cacao, nutmegs, citrus, cane plants, &c., are required. All such orders should be in writing, and verbal or telephone messages should be confirmed in writing. In default of this rule such orders may not be attended to.

6. All orders will be supplied subject to the discretion of the Agricultural Superintendent and no responsibility is taken in regard to quality or quantity of plants after despatch from the Nurseries.

7. Complaints as to the quality or quantity of plants, &c., supplies, or as to the prices charged, should be made in writing to the Agricultural Superintendent at the time of delivery.

TERMS ARE FOR CASH OR STRICTLY MONTHLY PAYMENTS AT THE DISCRETION OF THE AGRICULTURAL SUPERINTENDENT.

I. PLANTS.

	s.	*d.*	
Banana Plants (sections or suckers)		1	per plant (undelivered).
Oranges Budded		3	per plant.
Oranges Sour		6	per hundred.
Grapefruit Budded		3	per plant.
Lime Plants Budded/Grafted		3	per plant.
Mangoes Budded/Grafted		6	to 1*s.* per plant.
Coffee Plants	1	0	to 2*s.* per hundred.
Cacao Budded		2	per plant.
Nutmegs Grafted		6	per plant.
Avocado Pears		2	to 3*d.* per plant.
Avocado Grafted		2	to 3*d.* per plant.
Cane Plants	1	0	per hundred (undelivered).
Pineapple Plants		1	to 3*d.* per plant.
Eucalyptus	2	0	per hundred.
Casuarina	2	0	per hundred.
Palms (various)		3	per plant.
Ornamental Plants (various)		2	to 1*s.* per plant.
Seeds (various)		2	and 3*d.* per packet.
Plants for windbreaks, hedges, &c., other than the above mentioned	2	0	per hundred.
Grass and Fodder Plants	1	0	to 2*s.* per hundred (undelivered).
Cover Crops and Green Manures		2	per lb.

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